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IVERSITY OF THE STATE OF MISSOURI.

REPORT

— BY THE —

Curators to the Governor

— CONTAINING —

CATALOGUE, ANNOUNCEMENTS,

— AND —

OTHER MATTER PERTAINING TO THE UNIVERSITY.

YEAR ENDING JUNE 26TH, 1872.

UNIVERSITY OF ILLINOIS
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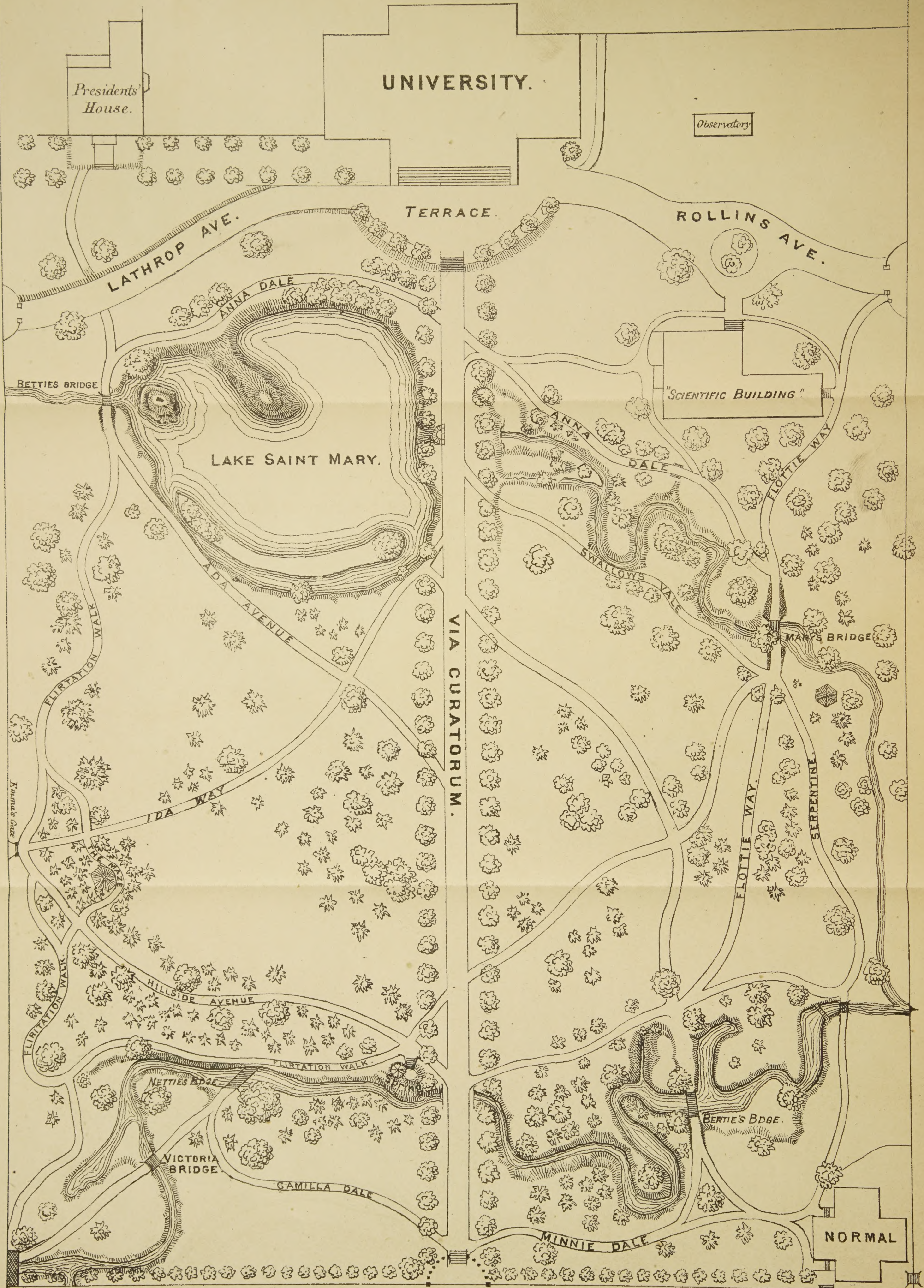

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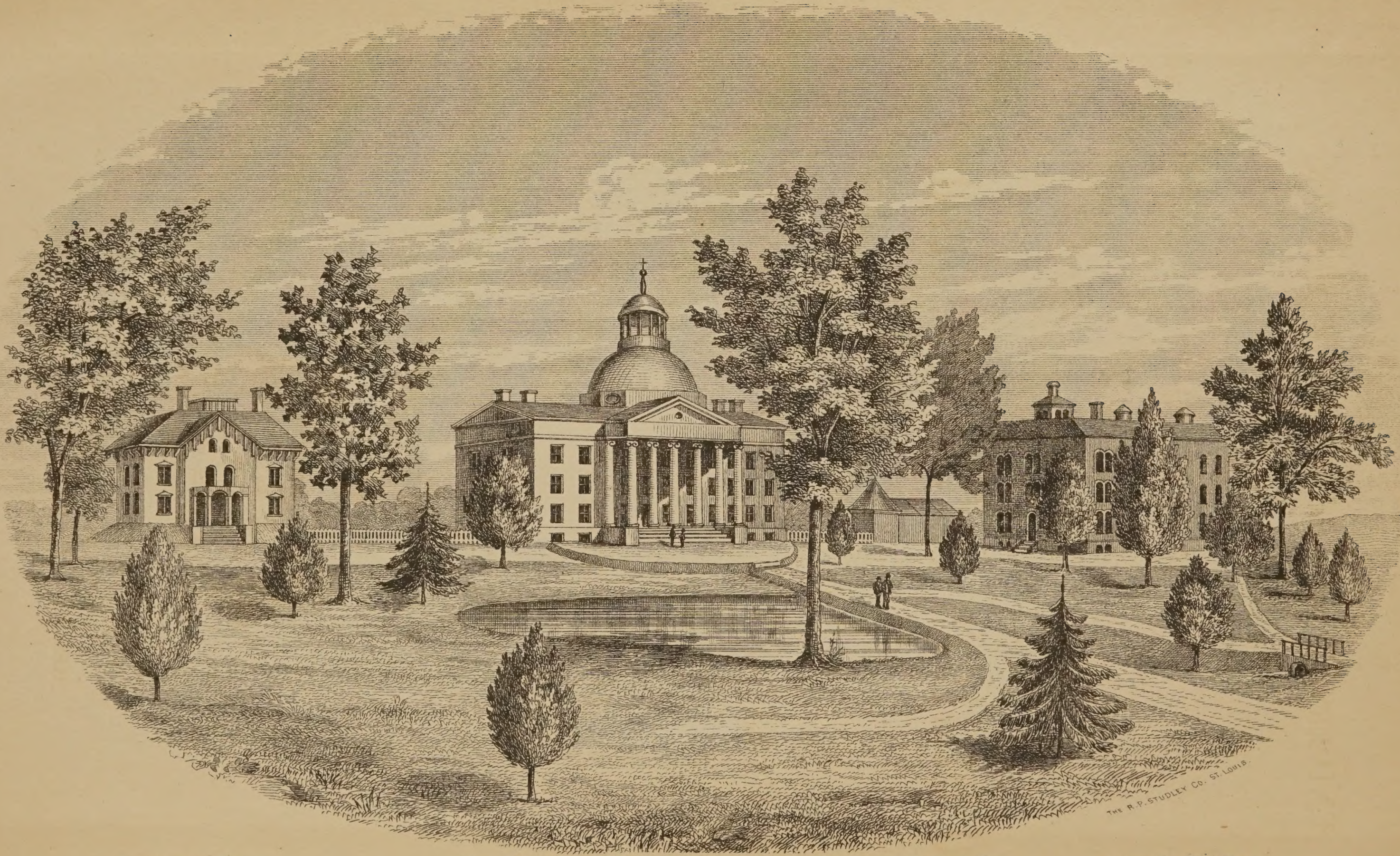
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STATE UNIVERSITY AT COLUMBIA, MO.

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From "An Act donating public lands to the several States and Territories," etc.

"SEC. 5. An annual report shall be made regarding the progress of each college, recording any improvements and experiments made, with their cost and results, and such other matters, including State, industrial and economical statistics, as may be supposed useful; one copy of which shall be transmitted by mail, free, by each, to all other colleges which may be endowed under the provisions of this Act, and also one copy to the Secretary of the Interior."—*Law of the United States (1862)*, CHAP. CXXX.

From "An Act to locate and dispose of the Congressional grant," etc.

"SEC. 14. At the close of each University year, the Board of Curators shall make a report, in detail, to the Governor, exhibiting the progress, condition and wants of the several colleges or departments of instruction in the University, the course of study in each, and the number and names of the officers and students, the amount of receipts and disbursements, together with the nature, cost and results of all important experiments and investigations, and such other matters, including State, industrial and economical statistics as may be thought useful. The Governor shall cause the same to be printed for the use of the General Assembly and people of the State, and shall cause one copy of the same to be transmitted by mail, free of expense, to all the colleges which may be endowed under the provisions of the Act of Congress, approved July 2d, 1862, hereinbefore referred to, and also one copy to the Secretary of the Interior, and one copy to the Commissioner of Agriculture, at Washington City."

REPORT.

LETTER OF THE PRESIDENT OF THE BOARD OF CURATORS TO THE GOVERNOR.

UNIVERSITY OF THE STATE OF MISSOURI,
COLUMBIA, June 1, 1872.

TO HIS EXCELLENCY GOVERNOR BROWN.

Sir:

In submitting the Annual Report of the Board of Curators, as required by law, for the year ending June 26, 1872, it affords me profound gratification to be able to report to your Excellency a year of uninterrupted prosperity and growth in the various departments of the University, and through you to assure the people of Missouri, that under the fostering care of the Legislature their own University is rapidly taking position as one of the great seats of learning in the nation. The slow growth of such institutions, both in this and other countries, is proverbial. In our own case, however, we confidently claim, that the University of the State has fully kept pace with the increase of our population and the general development of our material resources.

As President of the Board of Curators, who have the general oversight and management of the University, I congratulate you and the people of the State on this condition of things; and especially that we shall be prepared to present to the youth of the State, for the University year opening in September next, greater advantages and facilities of literary and scientific culture, and more ample means of instruction and illustration in the practical applications of science to the arts, than ever before. It is with confidence and pride that I give the assurance that no one need leave the State for the want of an institution within its borders of the first grade.

I beg leave to call the attention of your Excellency to the following details of the advancement made in the affairs of the University during the year now closing:

1. The increased number of students—and these about equally representing the north and south side of the river, and coming from almost every county of the State.

2. The finishing and equipment of the new scientific building, so that the *practical* may be more fully exhibited in connection with the *scientific*. This building will be ready for the instructions of the next session.

3. Enlarged instruction in different departments—as in drawing in connection with engineering—in modern languages—in the agricultural department, so that it has been estimated that the direct practical instructions given to students in grape culture and fruit growing alone are actually worth more to the State, in its economic interests, than the cost of all the departments of the University.

4. The enlargement of the library by the accession of many of its most valuable books; and the still further enlargement which is to take place before the opening of the next session. It is not to be forgotten that the Library Hall is a most convenient and elegant room, worthy the precious deposits of science and literature.

5. The beautifying of the University campus, making it a delightful retreat for the student, and aiding the culture of good manners and good taste, is by no means to be overlooked or passed by, when considering the improvements of the year.

6. The establishment of the department of military science, and in connexion with the same a course of instruction in engineering, practically illustrated by field work.

7. The Law College, which is to go into operation on the first Monday of October, thus meeting a great want which has caused a large number of our young men to resort to other States for the instructions proper to such a school.

8. The cheapening of tuition, so that the whole expense of entrance fee and incidental charges in the literary and practical courses cannot, for the entire year, exceed the small sum of twenty dollars.

There are many other items indicating progress and higher tendencies, which I cannot enumerate. We aim, in short, under the fostering care and liberality of the Legislature, and the appreciative patronage of a people rapidly advancing in all the arts of the highest civilization, to enlarge and perfect our University, until it shall become "an institution where," in the words of Ezra Cornell, "any person can find instruction in any study;" and to this end we will do what we can, and leave to those who come after us to finish our work, and place our State University among the most renowned institutions which have in the ages existed among men.

In conclusion, permit me to call the attention of your Excellency to a want ably and pertinently presented in the late Executive message to the Legislature, and which, so far as the University is concerned, affects one-half of the people of the State. That want is a suitable college home for those noble and spirited young women of the State who seek the benefits of the University in its various departments of culture, whether of teaching, or horticulture, or analytic chemistry, of the arts of design, or of general literature. This want must soon be met, as it certainly will be, in the progress of better and more enlarged views. The manifest injustice of excluding our women from such culture, in the wide field of knowledge, as they may desire, is such that the sentiment of the State will not long tolerate their practical exclusion for the want of suitable accommodation. Our daughters, not less than our sons, must have opened to them the full advantages of the University.

The Wisconsin Legislature has already erected a beautiful College Home for the daughters of the State; the Cornell University is just about to erect a similar one in connexion with that institution, and at a very large cost; Missouri will not be long behind in making like provision for her daughters in her State University.

With the renewal of congratulations on the enlarged usefulness and prospects of the University, and sentiments of high consideration for yourself,

I have the honor to be,

Your obedient servant,

JAMES S. ROLLINS.

HISTORICAL.

Upon the admission of Missouri as a State in 1820, the grant of two townships of land, for the support of a seminary of learning, was made by Congress, in accordance with the settled policy of the General Government, and the State Legislature became the trustee for the management of the land and the proper application of the funds arising therefrom.

The lands of the grant, known as "Seminary Lands," were mainly situated in the county of Jackson, and were among the best in the State.

By an act passed in the year 1832, the Legislature made provision to offer them for sale at a minimum price of $2 per acre. The result of this extremely improvident legislation was that barely $70,000, after expenses paid, was realized from these magnificent lands, worth, at the time of sale, a half million of dollars.

The sum thus originating was invested in the stock of the old Bank of the State of Missouri. When it had grown, by accumulation, to the sum of $100,000, the question of instituting and locating the University began to be agitated.

In the year 1839, an act was passed "to provide for the institution and support of the State University, and for the government of colleges and academies." This act, drafted by Henry S. Geyer, a distinguished lawyer and afterwards United States Senator, was very elaborate, consisting of five articles, and provided for colleges and academies in different parts of the State, to be connected with the State University, and to be under the visitorial power of its Curators.

This idea of a State University, with branches and subordinate institutions scattered over the State, was a favorite one with many distinguished men in the earlier history of the country, and was placed upon the statute book of several of the States; but the plan was found cumbrous, and too unwieldy to be carried out into practice, and was abandoned wherever projected.

At the same session a bill was passed making provision for the location of the University.

A bonus of $117,500 having been offered by the citizens of Boone County for its location at Columbia, the county seat, the offer was accepted, and the University was located accordingly.

This was certainly a most remarkable subscription for that period. Perhaps no county or town in the United States, up to that time, had made so large a subscription for such an object.

This was long before those wonders of munificence in behalf of institutions of learning, which distinguish the past few years, had occurred, and at a time when there was comparatively little money in the country, and before the effect of the great financial crisis of 1837 had passed away.

The subscription of a peck of parched corn to Harvard College, in the beginnings and poverty of New England, has become historic. The fact that one man who could neither read nor write subscribed and paid $3,000 to the State University of Missouri is as great a marvel, and as much deserves commemoration.

Another remarkable fact was, that there were men who actually subscribed and afterwards paid more than they were worth at the time the subscription was made.

Five young men belonging to a class in the Academy of Bonne Femme, a school a few miles from Columbia, subscribed each $100, and afterwards, by their own exertions, earned the money and paid the subscription.

The subscription of Boone County was largely due to the energy and zeal of the Hon. James S. Rollins, then a young man just entering public life, and an ardent friend of education.

On the 24th day of July, 1840, the corner-stone of the present principal University edifice was laid, in the midst of great pomp and ceremony. The address of the occasion, said to have been most impressive and eloquent, was delivered by the Hon. James L. Minor, of Jefferson City.

It is pertinent here to state that, prior to the location of the University at Columbia, there had been established, for a few years, the Columbia College. This institution had a substantial brick building two stories in height, and in dimension 26x60 feet. This school with its property became merged into the University, and its building afforded accommodation to the University until its main edifice was completed.

In the year 1840, the late John H. Lathrop, LL. D., then a professor of Hamilton College, New York, was elected the first President of the University.

The first class, consisting of two members, graduated in 1843. Although the institution was reasonably flourishing, few students reached the attainments required for graduation. This is, in fact, a usual condition in our Western institutions of higher education ; nor is the amount of good which they accomplish to be measured by the number of those who complete the full course and attain graduation.

In the year 1850, Dr. Lathrop resigned his position as President of the University, and the Rev. James Shannon, LL.D., became his successor, and continued President six years.

Professor W. W. Hudson succeeded Dr. Shannon, and upon his death, B. B. Minor, Esq., then of Richmond, Virginia, was elected President, and continued in office about two years, when, in the troubles of the civil war, the institution was suspended, and its buildings occupied by United States troops. A portion of the Professors remained on the ground, and soon resumed their instructions, so far as they had students and circumstances permitted. In 1863 there was one graduate, and the next year two, and in 1865, five. In this year Dr. Lathrop was again elected President, having in 1860 returned to the University, being elected Professor of English Literature.

Soon after the death of Dr. Lathrop, which occurred in the summer of 1866, the present incumbent, Daniel Read, LL.D., was unanimously elected the President.

With Dr. Lathrop's last official term ends the history of the University under its organization as required by the

Constitution of 1820, and the legislation growing out of that requirement. The University had existed for a period of twenty-five years—had encountered various vicissitudes—the bank stock constituting its endowment sometimes yielding very small dividends, and even, at times, none at all. Yet during this period there was substantial progress—an educational atmosphere was created—valuable *materiel* for scientific and literary studies was collected—many useful lessons as to the administration of such an institution had been learned. While there is much to regret connected with the history of portions of this period, involving personal and political feuds, uncongenial with literary pursuits or studious life, these are too often incident to new institutions, starting in a new country, and which, when they pass away, like certain diseases of the human body, do not make a second attack. The number of students who had graduated reached nearly two hundred, while a much larger number acquired that education which fitted them for important positions in society.

During all the period of which we speak, the State did nothing whatever for the institution, beyond appointing its Curators, yet paying them from the University fund. However needy the institution, the State did not make good even the deficit which occurred through State management. Far less did the State make up for the waste of a great and beneficent grant, designed for the good of her own people, which, with the ordinary care and forecast of a reasonably prudent trustee, would have afforded an ample endowment for the University.

This is a simple statement of facts, due to the veracity of history.

When Dr. Read came on to the ground, with a view of determining his course of action as to accepting the position to which he had been elected, he found the University largely involved in debt, its officers paid in University warrants, unconvertible, and at a large discount for cash; the payment of the income of the endowment fund suspended during the process of the conversion of the bank stock into United States bonds, as required by the new State Constitution; the University building greatly defaced and injured in consequence of its occupation by the United States troops, and some of the rooms unfit for use; the roof leaky and the plastering fallen from the ceilings of many of the rooms. The fences around the University campus were in a dilapidated condition. The chimneys of the President's house and portions of the walls stood mournful mementoes of the conflagration which had destroyed the house. Upon the first week of the opening of the session, not a single student appeared to matriculate, there being a county fair in the neighborhood; and on the second, less than forty came forward for that purpose.

There was still another difficulty, yet more formidable. It was apparent that in the fierce contest and bitterness of feeling which followed upon civil war, the successful party was in special political antagonism to the majority of the people where the University was located, and, though having full control, directly or indirectly, of every position in the institution, seemed disposed to involve it in the common lot of its locality. Doubtless this feeling was, to a greater or less extent, reciprocated. In this condition, it was evident that great prudence as well as firmness would be required.

With all these difficulties, Dr. Read declined to make his acceptance final. There was one circumstance, however, which precisely met his views, and that was the article on education in the new Constitution, adopted but a few months before.

The provision as to the State University was such as accorded with his own long cherished views of what a State University ought to be, and to which, if accepted by State action, he was willing to give his aid in carrying into operation.

The provision is in these words: "The General Assembly shall establish and maintain a State University, in which there shall be departments in teaching, in agriculture and natural science, as soon as the public school fund will permit." The University here required is a University with practical and special departments, precisely as he had elsewhere advocated and presented as the true idea of a State University.

After making known his views to the Board of Curators in a report, and before the Legislature in an address, stating, in very strong terms, the utter inadequacy of the existing funds for the support of such an institution, and presenting facts and statistics on the subject, Dr. Read returned to his former field of labor to await the action of the Legislature, and with the understanding and pledge that if there should be favorable action toward the support of the University, and its proper recognition, he would, in that case, make his acceptance final, and take charge of the institution.

The action of the Legislature was favorable. An act was passed giving ten thousand dollars for rebuilding the President's house, which had been consumed by fire, and making also an annual grant of one and three-quarter per cent. of the State revenue, after deducting therefrom twenty-five per cent. already appropriated for the support of common schools; and his acceptance thereupon was made final before the Board of Curators, April, 1867.

From this time commences the history of the University under new and, it is to be hoped, better conditions; from this period dates the first State aid ever rendered the institution. It is henceforth to be the University of the State of Missouri, established and maintained according to the requirements of the Constitution, with the departments as therein specified.

If it shall be thus maintained, the history which it will make for itself in the coming years will be one of greatly increased honor and usefulness. The institution, in entering upon a new phase of its life, succeeds to all the benefits of its past existence. As in the case of the individual, the life is the same, but under new conditions.

THE GENERAL PLAN.

There has been no wavering or turning aside from the *working* plan which was presented in the first Report of Dr. Read to the Board of Curators. This plan, designed for the actual condition and educational wants of the people of Missouri, was stated in the following propositions, viz.:

"1. To retain substantially the usual college curriculum for those who desire that course.

"2. To enlarge and perfect the scientific course.

"3. To establish and maintain the College of Agriculture and Mechanic Arts, which, in addition to instruction in agriculture, horticulture, etc., with the appropriate exhibitions and experiments (including military tactics), shall embrace: *first*, a School of Engineering; *second*, a School of Analytical Chemistry; and *third*, a School of Mining and Metallurgy.

"4. A Normal School.

"5. A Law School.

"6. A School of Preparation for other departments. This will be necessary in the present condition of education in the State, and may form a part of the Normal School.

"7. The University to be expanded by instituting colleges of applied science or professional departments, as its means will permit, or the wants of the State demand.

"8. The constant annual accumulation of the materials of education, as books, apparatus, cabinets, models, etc.

"9. The different departments of instruction to be so adjusted to each other, and *dovetailed*, as to economize labor and material, and thus render the instruction most effective to the largest number, and save means for the enlargement of the University and the increase of its facilities.

"10. A judicious economy in all departments, that there may be improvement in all, and the accumulation, year by year, of those educational means and appointments which belong alike to all departments and increase the general prosperity."

It will be observed that this plan, so far as relates to the course of study, exactly meets the requirements of the State Constitution, and also of the Congressional land grant of 1862, for the benefit of a college of agriculture and the mechanic arts.

In the carrying out of this plan, the Normal College was almost immediately established, absorbing in its classes the School of Preparation.

THE GREAT STRUGGLE.

This was upon the question of the dispersion of the means of the State, for higher education, upon different institutions in different parts of the State, or the concentration of these means upon one University, with different colleges or departments.

The question arose upon the disposition of the Congressional land grant of 1862, for the benefit of agricultural and mechanical colleges, and was most zealously discussed from the time of the acceptance of the grant by the State Legislature, March 17, 1863, until the final vote on the subject, February, 1870, a period of seven years.

The friends of concentration finally prevailed, and the proceeds of the land were given over to the Curators for the benefit of the required institution.

This ended a struggle more bitter and longer continued than that had in any other State as to the disposition of the Congressional grant. It is believed that the discussions before the Legislature, in the newspapers, in lectures, and before the people, which this protracted contest gave rise to, have already tended to educate the people of the State in the true idea of a University. Could all these discussions be collected in a volume, it would constitute one of the most valuable documents which has yet appeared on the method and scope of University education.

BONUS FOR LOCATION.

By the act locating the Agricultural and Mechanical College in connection with the University, Boone county (in which the University is situated) was required as a condition of the location to give $30,000 in cash and six hundred and forty acres of land for the use of the University. Commissioners were appointed by the act to see that the conditions of the location were fully complied with, and to accept, on the part of the State, the money and title deeds to the land, if approved. The Commissioners met, and after careful examinations reported that the required conditions were honorably complied with, and thus the final act of location was completed.

The land cost the county $60,000, which, with the cash gift of $30,000, makes the total $90,000. The county court, with almost perfect unanimity on the part of the people, ordered the issue of $80,000 in ten per cent. bonds, and the people of Columbia $10,000 in like bonds, the whole being in value equal to cash.

On the land are several houses, one of them being a very elegant mansion, worth $20,000, and which has proved of immediate use to the University for the accommodation of students. There are also on the grounds two large vineyards in a complete state of cultivation, one planted by Professor Swallow and the other by Major Rollins.

It is a noble domain, affords every variety of soil, is sightly, well-watered, and, with some improvements, will not be surpassed, if equalled, by any other agricultural college farm in the United States. Several gentlemen from other States, of high scientific attainments, as well as agricultural and horticultural tastes, are most enthusiastic in praise of the selection.

It is to be borne in mind, that, by the terms of the law, this land can never be alienated or converted to any other uses than those for which it was given. It remains to the State forever for the high purposes of scientific and agricultural education.

THE AGRICULTURAL COLLEGE.

No time was lost in the establishment of this department, after the location was made.

Before a dollar had been received from the land grant, the Curators proceeded to elect a Professor of Agriculture (the Hon. George C. Swallow, late the State Geologist), and also to appoint a superintendent of the farm, and a horticulturist. The expenses were paid from the general University fund.

At the opening of the University session, September, 1870, classes were organized in the Science of Agriculture — they were taken to the field to perform operations illustrating principles which they had learnt in the lecture room — and a labor system was organized.

For the ordinary branches, as the English language, bookkeeping, algebra, geometry, surveying, chemistry, etc., provision was made for them in classes already existing in the University.

The number in this department was, the first year, *twenty-six*, and in this, the second year of its existence, the number is *fifty-eight*. Besides, the effect has been most excellent upon the whole body of students, in diffusing agricultural knowledge and cultivating rural tastes.

Herein, indeed, is the great advantage of an aggregation of different schools or colleges in one University. Each separate school has its influence upon all the associated schools. There is created an emporium of learning, where students by their very association — by the atmosphere created around them — participate in the benefits of even the departments to which they do not belong, and thus become broader and better and more knowing men — men better fitted for the world as it now exists.

The next step of progress was the erection of the

SCIENTIFIC BUILDING.

The corner-stone of this building was laid on the 28th of June, 1871, and it will be ready for occupation and use by the opening of the next session, September 16th, 1872.

One of the first wants of an agricultural college manifestly is a laboratory for chemical analysis. Chemistry is the very grammar of the natural sciences. The scientific agriculturist must understand the soil he is to deal with, and the fertilizers he is to use. The very idea of practical scientific education is, that the student is himself to go into the laboratory, and do the work of chemical analysis. He is both to know and to do. This is, in fact, the only way to assure his knowledge and make it a permanent and useful possession. He is to do field work and laboratory work. He is to understand apparatus and reägents, instruments and machinery, by their use, not merely in the hands of his professor, but in his own hands. He is to have the means and opportunity of making experiments for himself. Hence the practical scientific institutions are more expensive in their equipments than the old-fashioned college.

The erection of the scientific building could not be deferred. It was a first step. The plan of the building will, it is believed, prove most satisfactory, both in its architectural style and in its general accommodation. It contains the chemical laboratory, both general and analytic, the lecture room, and other necessary appurtenances, on the ground floor. There is a basement for furnaces and other uses of the laboratory. On the second floor is the lecture room of the Professor of Agriculture, with space for the botanical, mineralogical, and geological collections. In the third story of the main building there are the rooms of the Professor of Natural Philosophy, including those needed for his various kinds of apparatus. The hall, projecting from the main building in the third story, is required for collections in natural history.

The cost of this building will fall but little, if any, short of $50,000.

There is no expense for mere architectural display. Its space is all for useful and necessary purposes; and it has been said, that there is not the loss of a square foot of room in the building.

HISTORY OF THE SCHOOL OF MINES.

It is to be borne in mind that the School of Mines, though forming an integral part of the University organization, and to be under the same control, was, by the act of the Legislature, to be located, under certain conditions, in the mineral district of South-east Missouri, and to receive for its support one-fourth part of the income from the Agricultural and Mechanical College land grant.

The school was by law required to be located, by a committee of the Curators of the University, in that county in the mineral district of South-east Missouri which should give the greatest available amount of money and land for the purposes of the proposed school.

The only counties which made bids under the law, in order to secure the location of the school, were Iron and Phelps.

The bid made by the County of Iron was as follows:

1. The county bonds, having twenty years to run, and bearing interest at the rate of ten per cent. per annum, payable semi-annually, $83,500.

2. Five thousand acres of land, valued at two dollars per acre, $10,000.

3. Twenty acres, site for college building, and the most valuable site offered—valued at $1,000 per acre—known as Fort Hill, $20,000.

Total bid of Iron County, $113,500.

The bid made by the County of Phelps was as follows:

1. In county bonds, having twenty years to run, and bearing interest at the rate of ten per cent. per annum, payable semi-annually, $75,000.

2. Seven thousand seven hundred and nine acres of land, valued at $38,545.

3. Forty acres of mineral land, for practical and experimental purposes, valued at $4,000.

4. One hundred and thirty acres, site for college building, adjoining the town of Rolla, and known as Fort Wyman, valued at $13,000.

Total bid of Phelps County, $130,545.

The Committee say, as the conclusion of their report, summing up the whole matter, the account stands thus:

Total value of the bid of Iron County, $113,500.
Total value of the bid of Phelps County, $130,545.

Making a difference in favor of Phelps County of $17,045.

Limited in their action by the *express terms of the law*, the Committee felt that they could not overlook the larger amount offered by Phelps County. They have therefore decided to fix the School of Mines and Metallurgy at Rolla, in Phelps County, and on the site tendered and known as "Fort Wyman," to be made final and complete upon the delivery by the county court of said county of the bonds of Phelps County, amounting to $75,000, legally and properly executed according to the offer made by said county court; and also deeds of general warranty to the lands donated, in accordance with the terms and conditions of the law providing for the location of said School of Mines and Metallurgy. The Committee, having discharged the duty assigned them, cannot do otherwise than to commend the liberal and honorable spirit by which the people of the counties contending for this prize have been governed, and to express the sincere wish that this institution of learning, so well endowed by the munificence of the general government and by the liberality of the people of Missouri, may provide large facilities in the development of our best mineral resources, and prove a blessing to the cause of science and liberal education.

A. J. CONANT, *Chairman.*
B. F. NORTHCUTT,
O. S. REED,
W. W. ORRICK,
JAMES S. ROLLINS,
F. T. RUSSELL, *Secretary.*

ST. LOUIS, December 8, 1870.

Phelps County having in all respects complied with the offers made, the School of Mines was accordingly located at Rolla, in that county; and the site of the buildings for the school is to be Fort Wyman, in the immediate vicinity of the town—one of the grandest situations in the State, commanding a view in all directions as far as the eye can reach, and in the midst of one of the richest mining districts of the world.

The site consists of *one hundred and thirty acres* for the college buildings and grounds, and of *forty acres* near by for practical and experimental purposes.

The Board of Curators acted, in reference to this school, with the same promptness and energy that they had done in putting into operation the Agricultural College; more difficulties were to be encountered, as in this case everything was to be done. There were neither professors in general science, nor books, nor apparatus, nor buildings.

The first thing to be done was to select a Director of the school. The President of the University and a Committee of the Board were appointed to make the selection. After the most careful enquiry and personal consultation with some of the first scientific men of the country, Professor CHARLES P. WILLIAMS, then a Professor in Delaware College, and State Geologist, and having a very large experience in practical chemistry, in mining and metallurgy, was chosen. Professor Williams entered with much zeal upon his work—rooms were secured in the new public school building at Rolla—two assistants were appointed at a very small compensation, on account of advantages of instruction in practical chemistry which they were to have, and the school was formally opened on the 23d of November last.

This inaugural occasion was one of very great interest. Addresses were delivered by Dr. Read, the President of the University; by Prof. Williams, the Director of the School; and by the Hon. John Monteith, State Superintendent of Public Instruction. There were present several Curators of the University, and many distinguished citizens from St. Louis and other parts of the State The occasion was regarded as *historic* in its character, and as inaugurating an important State Institution which is to last as long as the State itself.

During this its first year the school has prospered more than could be expected. The number of students has been 28, which for such a school is an excellent beginning.

LAW COLLEGE.

By the action of the Board of Curators at their recent meeting (8th of May), this long contemplated department is to commence its first session on the first Monday of October next, with a full corps of Professors and special Lecturers. This department has long been regarded by the Curators as essential to the completion of the University system.

The legal profession has a right to look to the State University to furnish professional instruction. It will bring in a new and more advanced class of students, will retain many of our graduates for professional studies in this department, and will conciliate a profession always powerful in a commonwealth.

It has been said, that the law student in the law school, with the practice of the moot court, will be better prepared for his profession, in half the time, than the student can be without this aid. But, besides, he is likely to go to his profession with higher views of its dignity and importance; and, likewise, with a purpose and inspiration fitting him to enter upon his work with better prospects.

The necessity of this action on the part of the Board is illustrated by the fact, that the names of no less than *thirteen* students from Missouri are found in the catalogue of a single law school in another State, and about half of these from our own University.

MILITARY SCIENCE.

The instructions in Military Science, and the drill of the soldiers, which had been suspended in consequence of the retirement from service of the late professor, will be resumed under favorable circumstances, Major J. W. McMurray, of the First Regiment of Artillery, having been detailed by the President as Military Professor in the University.

Major McMurray reported himself for duty on the 21st of March. He will also take charge of a class in practical engineering. Indeed, a class in topographical and field surveying, with the use of the instruments, is now under his instruction.

THE CAMPUS.

Major McMurray has undertaken a work which has been too long neglected—the improvement and beautifying of the University Campus. The survey of this ground, so admirably adapted in its natural surface to the highest art in the production of scenery, the laying off of walks, the adjustment of curves, the calculation of the topography, the construction of an artificial lake, and other arrangements, have afforded valuable practical exercises for his class.

The improvement, which is now in progress, will cost not less than $1,200; and, it is believed, will produce an excellent influence upon the moral and æsthetic culture of the students.

We cannot pass by this most desirable work, which already promises so much toward presenting to the eye a lovely and picturesque landscape, without recording it as one of the notable events in the history of the year's progress.

DRAWING.

A class in Drawing was organized for the second semester, under the instruction of Prof. Abert, the Professor of English Literature. The long experience of Prof. Abert as an Engineer in the U. S. Army, and his particular taste and artistic culture, eminently qualify him to give instruction of the highest order in this important art—elegant as an accomplishment, and indispensable to the engineer, the architect, and in all the applications of science to the pursuits of life. The class instruction has been highly successful, and many of the specimens retained in the drawing room exhibit extraordinary proficiency on the part of the students.

ADAPTATIONS OF THE UNIVERSITY TO ACTUAL WANTS.

In the progress of the University, we may safely claim that its tendencies are more and more to meet the actual wants of the people of Missouri. It is quite useless to devise a scheme that has no adaptation to the condition of society, or to that of so few as to render it practically useless by its narrow and exclusive range.

If ancient Harvard, in old and well-educated Massachusetts, with all the dignities of time and wealth upon her, can deem it consistent with her position to provide, as she is actually doing by reforming her courses in the scientific department, to meet the needs of young men from the schools and academies (not classical), and provide for their training to become teachers in the modern methods of instruction in the practical sciences, to become chemists and engineers, surely we, with a lower grade of scholastic education and discipline, in the midst of the pressing exigencies of undeveloped capital, with less leisure and means, may safely remit something from old college ideas in order to be useful—more widely and broadly useful—by not confining ourselves rigorously to the old round of study.

Dr. Barnard, of Columbia College, in his excellent report of 1871, as President, shows conclusively, by facts and statistics, that the system of collegiate education, as hitherto conducted in our country, has greatly declined in general estimation—that the number in attendance is less than thirty years ago in the ratio of two to one, taking into account the increase of population—that in New England even, where it has been most appreciated, it has fallen off—that in all those institutions, where adherence to the old curriculum is the rule rigidly enforced, the number has either decreased or remained stationary, while those institutions allowing University freedom of courses have increased in the number of the students beyond all precedence, as Harvard, Michigan and Cornell. The popular voice does not, then, demand an inferior grade of education--it does demand that it shall be adapted to the varying capacities of students. It demands more thoroughness in a chosen course, rather than the superficiality which results from dragging young men over courses not wanted.

We have also passed the day when it is held that all practical studies are useless for discipline, and "that, so far as education is concerned, the most useful studies are the least useful, and the least useful are the most useful." In short, that to be liberally educated, a man must be the most ignorant of all others, ignorant of himself and of his relations to nature, ignorant of government and its laws, ignorant of the earth and its soil, its minerals, its animals, and its vegetables, ignorant of the forces and powers all around him.

The University will, according to the means afforded it, meet actual existing wants, both in science and literature.

We especially desire to bring to its halls men of ripe years and mature thought.

COURSE FOR YOUNG MEN BEYOND THE ORDINARY SCHOOL AGE.

For the first, in accordance with the report of a committee reviewing our entire organization, and adopted by the Board of Curators, December, 1870, we present a course for young men beyond the ordinary school age:

"There is a large class of young men," says the report, "from the age of twenty-three or four to thirty in our great West, active and intelligent, some of them in business, or having accumulated considerable means, who, as they phrase it, want more education. They are willing to spend a couple of years in self-improvement, but not a longer time, on account of their age. The University is the proper place for them. They will not go to the ordinary school or the academy. The committee believe that great good can be accomplished by so arranging the courses of study that such young men can always be provided for, and that information to this effect be given in the circulars of the University. We must adapt our system to *actual* wants, and not to an *ideal* condition of things.

"Mathematics, physical science, in some of its branches, commercial studies, embracing practical book-keeping, the English language and literature, political, moral, and historical studies, will afford an ample list for this class of young men to choose from."

Such a course is more precisely indicated in this report in the proper place as a guide, although it is not intended to bind them down to it, if they find other studies better adapted to their wants and purposes in life.

THE INTRODUCTION OF WOMEN STUDENTS.

Here is a very interesting and instructive part of our University history. This measure seemed at first a very bold and hazardous one. It was not so done in the days of the monks, nor in the great Universities of Europe, whether British or Continental, nor in Harvard or Yale, nor even in Michigan, aggressive as she is upon time-honored uses and abuses.

We first allowed young ladies to come into the Normal Department to qualify themselves as teachers. We were not yet prepared to permit them even to join in the worship of the chapel, nor to come to the University for attending recitations or lectures. They were kept at the back door a full year on the score of some danger.

Finding, however, that the young women at "the Normal" did no manner of harm, we very cautiously admitted them to some of the recitations and lectures in the University building itself, as supplementary to their regular exercises; provided always, they were to be marched in good order, with at least two teachers, one in the front and the other in the rear of the column, as guards.

Finally, there was another advance, the young women were permitted and invited to come into the chapel, and, after the novelty of their presence was worn off, even to join their voices in prayer and praise in the morning worship.

By degrees, and carefully feeling our way, as though explosive material was all around us, we have come to admit them to all the classes in all the departments, just as young men are admitted.

They have now for the past two or three years studied calculus, and analytic geometry, and geology, and one has even borne off a Greek prize. And now, at the commencement of 1872, we admit a young woman *ad baccalaurealem gradum in scientia*, and that not *speciali gratia*, but with the standing of third in her class.

Great progress has been made everywhere in this direction since we took our first hesitating steps. Such has been the progress of ideas in our own country—indeed, in the civilized world—as to leave no room for doubt or hesitancy any longer on this subject. With Indiana and Iowa, with Wisconsin and California, with Cornell and Michigan, and with Paris, Zurich, Vienna, London and Edinburgh abroad (and with even our own Harvard almost ready to take the step), now admitting women to University privileges, we may feel assured and confirmed, if indeed our own experience left any doubt on the subject.

The special want of the University to-day is the College Home for those noble and ambitious young women who wish to pursue University studies. The State must see to it that this accommodation is provided. Honor, duty, justice, tone, and every manly and generous sentiment demand it.

Without the proposed accommodation, we cannot have any considerable number of women as students; with it, the number would be at once from one to two hundred, and of the very best and purest of the land, and producing its elevating effect throughout the State.

The following is an extract from a late report of Dr. Read, to the Board of Curators, on this subject. He says:

"It must be understood that the provision for the accommodation of young women in the University, sought for by this Board in its petition to the Legislature, and recommended by the Governor in his recent message, is not in competition with, or antagonistic to, any other department. It is in aid of all, and most especially of the Normal and Agricultural Departments.

"What kind of a Normal School, for example, can there be, in which young women are practically excluded for the want of suitable accommodation? Let one or two facts be here stated: There are four State Normal Schools in Massachusetts. More than seventy-five per cent. of the pupils in these schools are females, and of one of these a woman is the Principal. The reason of this proportion is exhibited in another fact—about 8,000 of the teachers of public schools in Massachusetts are females, and less than 1,000 are males. In all the Normal Schools, I think, without exception, the majority of the pupils are largely females; and at St. Louis, Cincinnati, and in several other cities, the Principals of the City Normal Schools are women. In Wisconsin, when Prof. Allen became the head of the Normal Department of the University, he brought into the University not less than one hundred female teachers, and not ten young men. It was in consequence of this beginning that the Legislature of Wisconsin made its appropriation of $50,000 for a College Home for women, in connection with the State University at Madison; and the beautiful stone edifice erected therewith, which is just now completed and occupied, awakens the universal admiration of citizens and strangers, not merely as a work of art, but as a monument of legislative patriotism and wisdom.

"The special benefit of the Normal Department will be for women—it is for them as the teachers of our race. Shall we practically exclude them?

"Now, in this connection, as to the Agricultural College: Not an Agricultural College in the West excludes females. Here I name, specifically, Michigan, Wisconsin, Minnesota, Iowa, Kansas, Illinois and California. The studies of these schools are peculiarly and pre-eminently adapted to women—such studies, for example, as horticulture, including the culture of flowers, the laying off garden grounds and lawns—farm architecture, also, to say nothing of chemistry, botany, etc.

"The Hon. Henry Colman, of Massachusetts, who, some twenty-five years ago, visited England as the representative of the Agricultural Society of that State, speaks of duchesses and other women of the highest English nobility, who, in proper garb, accompanied him to the stables to show him cows and horses, giving him the pedigree of particular animals: and he speaks of this as a general thing. We must diffuse a rural taste among our people. We cannot have a healthy tone of society without it. Our wives and daughters must be taught that it is noble, and beautiful, and honorable, to understand and cultivate the garden, to understand and cultivate the small fruits, and both to understand and love the domestic animals.

"Then we must, as the guardians of higher education, not only open the Agricultural College for the admission of women, but provide, in connection therewith, a suitable home to receive them, while in attendance upon its instructions.

"Farmers and lovers of rural life ought, of all others, to aid in this noble design. I am most happy to know that Prof. Swallow, our Professor of Agriculture, most fully sympathizes with these sentiments.

"On this subject, I venture to suggest that an expression from our State Board of Agriculture would be in excellent taste. The women of the State must know how to beautify the home and to cultivate the garden, and to do many other things pertaining to rural economy, which perfectly befits their sex. They must have the science and the art to do so. Full provision must be made for them in the College of Agriculture. Such, I am sure, would be the unanimous sentiment of that most intelligent body of men."

THE LATE LEGISLATION.

The purport of the late act of the General Assembly for the benefit of the University is as follows:

1. The Governor is directed to cause to be issued, upon the passage and approval of the act, coupon bonds of the State of Missouri amounting to the sum of $166,000, in the sum of $1000 each, and to be dated the first day of July, 1872, the principal payable in lawful money of the United States, twenty years after issue, the interest payable semi-annually, at the Bank of Commerce in the city of New York, at the rate of six per cent. per annum. These bonds are required to be delivered to the Treasurer of the Board of Curators.

2. The Curators are authorized to use so much of the proceeds of sixty-six of these bonds as may be necessary—

1st—To finish and fully equip the scientific building;

2d—To pay off the outstanding debts of the University, amounting to the sum of $19,600;

3d—To expend the further sum of $5000 in making additions to the library, for the benefit of the Agricultural and Mechanical College, and the balance to remain a part of the permanent endowment fund.

MINING SCHOOL APPROPRIATION.

In like manner, bonds of the same kind, to the amount of $35,000, payable at the same place and at the same rate of interest, are to be issued for the benefit of the School of Mines, at Rolla, and the proceeds to be appropriated toward the erection and equipment of a suitable building, under the direction of the Board of Curators. The bonds are to be delivered to the Treasurer of the School of Mines, and by him receipted for.

REPORT OF EXPENDITURE.

This is, in both cases, to be made in the annual report to the Governor, containing a full and complete statement of account.

It will be observed that the permanent increase to the funds of the University is but $6000 per annum, while the institution is greatly relieved by the appropriation for specific objects.

The amount is not such, however, as will justify any departure from a scrutinizing economy.

NOT A GIFT, BUT THE PAYMENT OF THE SEMINARY FUND HELD IN TRUST FOR THE UNIVERSITY.

The appropriation of the $166,000 is by no means an original gift or grant to the University--it is simply the re-payment of the Seminary Fund, with interest thereon, held in trust by the State for the use of the University.

The $35,000 for the benefit of the Mining School is an original appropriation, showing an appreciation of one of the greatest interests of Missouri.

THE ACT IN REGARD TO TUITION FEES.

1. This act abolishes what is known as the county system of appointment, by which the county court appointed students equal to the number of Representatives from the county, to be exempt from tuition fees.

2. The payment of an annual entrance of ten dollars admits all youths resident of the State, betwixt the ages of sixteen and twenty-five, to the preparatory department, and also to the practical, scientific and literary departments. The Board may establish a library, and incidental charge, not to exceed five dollars for each term—that is, the whole charges may be twenty dollars per college year to the class of students named, but cannot exceed that sum. This is so low a rate in comparison with that of other institutions, or with actual cost, that it may be regarded as merely nominal.

The Board establishes the qualifications of students for admission as heretofore; and if receiving students older or younger than the age named, may fix the rate of tuition. They may also fix the rate of charges to be made to non-resident students.

The Board is also left free to establish the rate of charges for law students, or those of other strictly professional schools.

GENERAL PROGRESS.

(FROM THE REPORT OF DR. READ TO CURATORS.)

The present work, both of Board and Faculty, is without doubt largely forming work—foundation work—in public institutions the most important of all work, yet, while most lasting and controlling, at the time least apparent to the public eye.

While this is true, and much of the most valuable work now done will exhibit its best fruits in future years, the people of the State demand immediate results.

If the question, then, is put to us on this point—what is the present success of the University—how does it compare with other similar institutions in the rapidity of its advancement? my unhesitating reply is, no similar institution in the country has, since the close of our civil war, had a more steady and healthy growth, until we may safely claim it has attained a most honorable position among the educational institutions of the highest grade in our country. Its rank, as one of the leading institutions of the nation, is everywhere recognized. Its professors cannot go into any of the great educational or scientific associations without position being awarded them, as belonging to an institution the plan and organization of which attract attention among philosophic educators.

Yet its progress has been so silent, and its growth so even, that we can hardly at once, and without consideration, take in the full extent of its growth and expansion—how much more solid its foundations have become, and are becoming. It is here to be remembered that colleges, on account of the slowness of their growth, are proverbially called "the trees of centuries."

Let any one conversant with the facts, as they actually existed one year subsequent to the war—and it is difficult to realize them as they really were—as, for example, the condition of the University building, in which soldiers had been quartered for two years; the ruins of the President's house; not money in the treasury to buy a pound of nails to fasten down the boards of the rickety walk and bridges leading to the main building; with nearly $20,000 of unpaid warrants afloat, and a bank debt of $5,000 for loaned money; and, what was worst of all, the bitterest prejudices meeting every effort in behalf of the University—let any one conversant with these and such facts look at the change since that period, and he will, if in any degree acquainted with the growth of other similar institutions, be equally surprised and gratified.

Let him look at the accession of land (640 acres), forever to remain as a portion of the University domain; at the buildings purchased or built; at the increase of endowment fund; the payment of floating debt; at the repair of buildings; at the increase of library, apparatus and models; at the increased number of students and teachers; at the organization of the University, as such, with appropriate departments, as required by the Constitution of the State. Or let him take, as a test, the progress of any one year—the last year for example, which gave us the agricultural grant; the fitting up and repair of the Hudson House, with its beautiful lawns, for the use of students. It gave us, also, with a large increase of the library itself, this noble library hall in which you are now sitting, which had been before but a waste and uncomely place in the University building, but now made its chief ornament; it gave us the organization of the Agricultural College, with the successful beginnings of specific instruction therein, and generally more complete organization in all the departments of instruction.

Or, if we take the two preceding years, we can point to the erection of our cottages and the inauguration of cheap boarding, to the erection of the Normal building, to the admission of female students, and, generally, to the removal of prejudice and the growing confidence of the people of the State.

Thus, by the favor of Providence, each year has had its fruit and crowning blessings.

Now, as to the present year, I have the gratification of reporting to your body that it commences under more favorable auspices than any which has preceded it. It is already manifest that the number of students for the year will reach nearly or quite 300. This is a number equal to that of many of the most renowned institutions of learning in the land—in fact, greater. For it is to be remembered, that in those institutions where the number is at higher figures, the students are largely professional—law or medical—who remain as students only some three or four months.

It is proper, also, to remark that we have now but few students who are not of the proper University age, which is not under sixteen. I have, in fact, discouraged the attendance of mere boys, for whose care we have no proper provision, and who are a detriment to our organization. The average age of our students is above that of students of the Eastern colleges.

Not only is the number of our students greater than heretofore, but it is peculiarly gratifying to me to be able to report that their deportment is almost perfect—more nearly so than I have ever known in so large a body of young men. It is to be hoped that the stupid college trickery, which is never engaged in but by a few of the "baser sort," is forever banished from our walls by a proper tone and elevation of sentiment prevailing among the students themselves, and constituting the public opinion of the University.

The erection of the scientific building for the use of the Agricultural and Mechanical College, and the opening on the 23d of November last of the Mining School at Rolla—an institution ever to be cherished by this Board as a school devoted to one of the greatest interests of the State—are among the historic events of the year, which will render it memorable in the history of the University's progress.

Such is the record, or rather a leaf from it, which we are able to present to the public.

I by no means claim that we have attained perfection, or that there do not exist evils which require correction. In our individual affairs, we commit mistakes and form wrong judg. ments; in public affairs, there is even greater liability to them. There must be such vigilance as to find out, and such firmness as to correct, as soon as possible, and such prudence also as to make corrections with the least disturbance. Neither men nor policies should be permitted to stand in the way of the quiet and harmonious operation of a system.

The creation of a Faculty of Instruction is a difficult thing always for a Board, however sagacious it may be. A Faculty is a growth, rather than a creation. In the older institutions, professors come in with universal consent, after ample trial as tutors or assistant professors, or after eminence achieved in a specialty, and experience in imparting instruction in it; and hence retirement, otherwise than voluntary, is seldom necessary. In our newer institutions, there is not always the same opportunity of trial; and hence, the pruning-knife is sometimes indispensable, but is certainly to be used with great discretion.

THE UNIVERSITY FOR THE WHOLE PEOPLE, AND THEREFORE TO BE NON-SECTARIAN AND NON-PARTISAN.

The University exists by the power of the State, and is for the whole people of the State, and hence the mere partisan politics and sectarian religion are to be wholly ignored and discarded. No man is to be accepted or rejected, either as President, professor or other employee of the University, because he belongs to this or that sect, or to this or that political party. The University, and indeed our whole State system of education, should be entirely above and beyond the rivalry of sects, or the ups and downs of political parties. The only rivalry which should exist among them ought to be, which shall do most to educate the people. Those who hold the high position of President or professor in the State University, ought, in the words of the late President Lathrop, to be "*too good patriots to be partisans, and too good Christians to be sectarians.*"

The same broad view of the office of the State University to the whole people must embrace the idea, that it shall be open to the women of the State.

GOVERNMENT OF THE UNIVERSITY.

The present organization of the University, as established by the Legislature, provides for a Board of Curators, consisting of twenty-two members, two of whom must be from each Congressional District, and four from the county of Boone. They are appointed by the Governor and confirmed by the Senate. (See Laws of 1868, page 175.)

The act locating the Agricultural and Mechanical College also provides, that at least seven Curators shall be from the State Board of Agriculture. Five have accordingly already been appointed from that Board to fill vacancies.

"They have power to make such by-laws or ordinances, rules and regulations, as they may judge most expedient for the accomplishment of the trust reposed in them, and for the government of their officers, and to secure their accountability."

The Curators appoint the President, professors and tutors, no one of whom is permitted to preach or exercise the functions of a minister of the gospel, or of any one of the learned professions, during his continuance in office.

The manifest object of this provision is to secure a Board of Instruction for the University who shall be professional teachers, and devoted to their profession as such; and not men belonging to some other profession and exercising its duties.

The duty of the President of the University, as defined by the act of incorporation, is, "among other things, to superintend and direct the care and management of the institution and its grounds, and to make and transmit to the Curators, at each annual meeting thereof, a report of the state and condition thereof, containing such particulars as the Curators shall require."

The locating act referred to, also provides for a Board of Visitors, five in number, three of whom shall be gentlemen distinguished in agriculture or the mechanic arts, and two of whom shall be graduates of the University.

This last Board performs nearly the duty of the Board of Overseers of Harvard University.

It is a small body, is required to meet at least once each year, to make personal examination into the condition of the University in all its departments, and to report to the Governor, suggesting such improvements and recommendations as they consider important, which report shall be published with the annual report of the Curators.

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Hon. HENRY T. MUDD	Kirkwood.
Prof. J. W. MATTHIAS	Springfield.
JOHN E. WORTH, Esq	Springfield.
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Rev. J. W. VINCIL	Columbia.

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R. L. TODD, Secretary. J. H. WAUGH, Treasurer.
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VISITORS.

(UNDER APPOINTMENT OF THE GOVERNOR.)

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Col. ALEX. F. DENNY	of Randolph County.
CHARLES E. LEONARD, Esq	of Cooper County.
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JOSEPH FICKLIN, A.M.,
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Professor of English Language and Literature, and Instructor in French and German.

JOHN H. OVERALL, LL.B.,
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MAJ. J. WILSON McMURRAY, U. S. A.,
Professor of Military Science and Tactics, and Civil Engineering.

HON. BOYLE GORDON,
Professor of Law.

HON. SAMUEL TREAT, U. S. DISTRICT COURT,
Lecturer on Admiralty and Maritime Law.

HON. ARNOLD KREKEL, U. S. DISTRICT COURT,
Lecturer on the Jurisdiction of the Federal Courts.

D. W. B. KURTZ, A.M.,
Assistant in College of Normal Instruction.

MRS. C. A. RIPLEY AND MISS MARY B. READ,
Assistants in Department of Normal and Preparatory Instruction.

CHAS. V. RILEY, STATE ENTOMOLOGIST,
Lecturer on Entomology.

PROF. GEORGE C. SWALLOW,
Secretary of the Faculty.

PROF. J. G. NORWOOD,
Librarian.

STUDENTS.

RESIDENT GRADUATES.

Prossinger, Martin, Ag	Bavaria, Ger.
Hubbard, Socrates, Lieut.	U. S. Navy.
Gentry, Richard, A. M	Columbia.

SENIOR CLASS.

Allen, Nelson Wash	Allenton.
Barr, George Franklin	Quincy, Illinois.
Baskett, James Newton	Mexico.
Callison, Sue, Nor	Jonesport.
Davis, George Ferdinand	Columbia.
Ellington, Andrew Monroe	Louisiana.
Ewing, Henry Watkins	St. Louis.
Harrison, Andrew Turner, Nor	Richmond, Va.
Hedden, David Calvin	New Orleans, La.
Horner, James Wallace	Columbia.
Houston, William Lockhart	Mexico.
Johnston, Thomas Alexander	Boonville.
Matthews, George Washington	Pittsburg, Pa.
O'Bannon, William Bird	Sedalia.
Packer, Helen Adaline, Nor	Galena, Ill.
Rollins, George Bingham	Columbia.
Swinford, Samuel Thomas, Nor	Independence.
Seward, Gertie Calhoun, Nor	Laclede.
Trantham, William Henry Benton, Nor	Springfield.
Ware, Sarah Anna	Spring Hill.

JUNIOR CLASS.

Armstrong, John William	Hallsville.
Baker, William Rice	Lone Elm.
Barton, Caleb Akers, Nor	Holden.
Beattie, Samuel Morrell	Columbia.
Coles, Fiatt	Trenton.
Crane, Edward Bates, Ag	California.
Cooney, James	Galva, Ill.
Craycroft, Ben, Ag	Syracuse.
Cromwell, Mary Rebecca, Nor	Columbia.
Daniel, James Worrell	Mexico.
Douglass, Jesse Brown, Ag	Lathrop.
Dryden, Randall	Carthage.
Dryden, James Henderson	Carthage.
Dyer, Simpson Cash	Towash, Texas.
Elliott, George Newton	Brookfield.
Fagan, Robert	Milwaukee, Wis.
Flood, George Edward, Ag	Columbia.
Forrester, Simon Giles	Houston.

Forsha, William Frank, Ag	Glenwood.
Fudge, Enoch Hansbrough	Harrisonville.
Gentry, Sallie	Columbia.
Gordon, Webster	Columbia.
Gray, James William Thomas	Independence.
Hayes, Scott, Ag	Springfield.
Horner, Edward Preston	Columbia.
Lear, Kossuth Morton, Ag	Hannibal.
Leeper, Charles, Ag	Graham.
Lyon, Ida Ernst	Covington, Ky.
Martin, Reuben Thompson, Nor	Louisiana.
Marvin, Edward Richardson	Sedalia.
McBaine, Turner, Jr	Columbia.
McDonald, Evans Peery	Wellington.
Moore, Jerome	Bolesville, Ark.
Owen, Thomas Jefferson	Black Oak.
Ridgway, Joseph Thomas	Columbia.
Rogers, Stephen Cawood, Ag	Lathrop.
Runyan, Elgin Leslie	Columbia.
Scott, Bem	Titus Co, Texas.
Speed, John Wesley	Syracuse.
Staley, Lorin Andrew	Columbia.
Townsend, Joseph Longking, Ag	Columbia.
Walker, Robert Franklin	Versailles.
Ware, Spencer Hugh	Salem.
Wills, Andrew Jackson, Ag	Lamar.

SOPHOMORE CLASS.

Booher, William Webster	Geneseo, N. Y.
Dulin, Edgar Gibson	Columbia.
Gordon, Walter Scott	Columbia.
Johnston, Augustus Menifee	Chillicothe.
Riggs, Brutus	Sturgeon.
Ripley, Julia Fisk	Columbia.
Rollins, Curtis Burnam	Columbia.
Stephens, Richard Henry	Bellefontaine.
Switzler, Warren	Columbia.
Vincil, James Edwin	Columbia.
Watts, John William	Clarksville.

FRESHMAN CLASS.

Aldrich, Ida Dickson	Columbia.
Allee, William Sylvanus	Versailles.
Allen, Ephraim Walton, Ag	Mitchellsville.
Beale, John Tavner, Ag	Eureka.
Bettes, Albert Oscar	Holden.
Bissell, Merton Sylvan	Ada.
Billingsley, Whitfield Urban, Ag	Snow Hill.
Brinker, William Hugh	Warrensburg.
Brooks, James Madison, Ag	Middle Grove.
Brown, Walter Roddy, Ag	Harrisonville.
Buckmaster, Caleb Lockwood	Freedom.

Burnam, John	Columbia.
Burnam, Curtis	Columbia.
Busey, Alfred Plasceit, Ag	Weston.
Burris, Franklin Pierce, Nor	Mitchellsville.
Butler, Oscar, Nor	Mitchellsville.
Burlingame, Josiah Ginn, Ag	Snow Hill.
Canady, Thomas Aaron	Trenton.
Carlisle, Thomas Corwin, Nor	Winchester, Ohio.
Carothers, Samuel, Nor	Clarence.
Cass, John William, Ag	Holden.
Chamberlain, Arthur Wallace, Ag	St. Louis.
Chase, George Nathan, Ag	Granby.
Clark, James Alvan, Ag	Florida.
Clark, John Bullard, Nor	Hallsville.
Clark, Allen, Ag	New Haven.
Coats, Alonzo Barnes, Ag	Walnut Hill.
Connaway, William Peyton	Stockton.
Cook, Jacob, Nor	California.
Cornwell, Benjamin Ledgley, Ag	Kirkwood.
Crew, Thomas Franklin, Nor	Humansville.
Cromwell, Ella	Columbia.
Daily, Wilson Lee Gates, Nor	Savannah.
Davis, Samuel Hariss, Nor	Stockton.
Douglass, William Henry	Columbia.
Drumeler, Cornelius Murrell, Ag	Peverly.
Elliott, Reginald Heber, Ag	Kirkwood.
Field, John Hardin, Nor	Columbia.
Frost, William Simeon	Rolla.
Garrard, James William, Nor. and Ag	Martinsburg.
Garrard, Stephen Lewis, Ag	Centralia.
Garretson, Isaiah, Nor	California.
Gordon, Scott David	Columbia.
Grimes, John Kelly	Knoxville.
Hall, Erasmus Calvin, Nor	Gower.
Hawn, Aaron Madison, Ag	Sumac.
Head, Charles Waller	Millersburg.
Hulen, Calvin, Ag	Hallsville.
Hultz, Manlius Ezra	Columbia.
Hultz, Edgar Mills	Columbia.
Hume, Ettie	Columbia.
Humphrey, Theron Martin, Nor. and Ag	Weston.
Huse, William Jason, Nor	Cole Camp.
Johnson, William Taylor, Ag	Hallsville.
Jones, John Thomas, Nor	Buffalo.
Judy, Dick	Mexico.
Laughlin, Napoleon Bonaparte, Ag	Wittenburg.
Mahon, William Thomas, Nor. & Ag	Linn.
Marshall, William Boyd	Columbia.
Maston, Lee Walter	Salem, N. C.
Marshall, Albert, Ag	St. Joseph.
Maupin, Luther	Columbia.

McMillan, Sam'l H., Nor. & Ag	Jefferson City.
Miller, Frederick Jacob, Nor	Buttsville.
Miller, Jacob Dee, Nor. & Ag	Middletown.
McSchooler, Emma Eliza, Nor	Columbia.
Moore, Judson Robbins, Ag	Manchester.
Munson, Frederic Trembley, Nor. & Ag	Clinton.
Murdoch, James Crawford	Marble Hill.
Napier, Barnette Turner, Ag.	Chillicothe.
Nichols, William Hite, Nor	Columbia.
Noble, Charles Duncan, Ag	Weston.
Nowlin, Susie, Nor	Wellsville.
Orme, John Pemberton, Nor. & Ag	Ash Grove.
Orr, Robert Jamison	Mt. Vernon.
Porter, Isaac Milton, Ag	Mt. Enterprise.
Rawson, James Cicero, Ag	Wellsville.
Read, Bertha	Columbia.
Riley, Chilion	New Madrid.
Roberts, Fayette Brown	Rocheport.
Robinson, Walter Landon	Greenton.
Rowden, Satterwhaite, Ag	Vienna.
Rubey, Thomas Carson, Nor	Macon.
Russell, Julia	Columbia.
Russell, Frank Lenoir, Ag	Columbia.
Samuel, Valora Gale	Salisbury.
Seibert, David Benton	Altenburg.
Sherman, James Silas, Ag	Charleston.
Sherman, Henry Edwin	Charleston.
Sherwood, William Eli	New Madrid.
Smith, Andrew Jackson, Nor. & Ag	Savannah.
Staley, Mettie Victoria, Nor	Columbia.
Stannus, Ephraim James, Ag	Kirkwood.
Thurman, Berry Green	Cedarville.
Todd, Elizabeth Pope	Columbia.
Torrey, John Linn	Louisiana.
Varner, Laura Adam	Austin.
Walker, Thomas Winslow, Nor	Plattsburg.
Ware, Charles Perry, Nor. & Ag	Ada.
Welborn, Edward Livingstone	Freedom.
Wells, Harry Taylor, Nor	Greenfield.
Wheeler, Lorinda James, Nor	Columbia.
Wheeler, Charles Jackson, Nor	Knob Noster.
Wilson, David McConaughy	St. Charles.
Wilson, John Henry	Pleasant Hill.
Wilson, Robert Munson	Altenburg.

PREPARATORY CLASS.

Atkison, Robert Alexander	Butler.
Austin, Frank Roselle	Hamilton.
Bell, Victor Buck	Chillicothe.
Blanchard, Belle	Columbia.
Boulton, Robert Perrine	Columbia.

Buie, George Monroe	Marshall.
Buie, Davis Mitchell	Marshall.
Burge, Royal Joseph	Clinton.
Burroughs, George Winfield	Columbia.
Chase, Charles Albert	Graham.
Chiles, Alexis C. A. L. P. P.	Lockhart, Texas.
Chinn, Richard Taliaferro	Mattagoda, Texas.
Clark, James Adams, Jr	Glasgow.
Clinkscales, Emmett Clayton	Columbia.
Codding, Elroy Edward	Sedalia.
Cohick, George Washington	Bridgeton.
Collins, James	Lockhart, Texas.
Crumbaugh, Edward	Columbia.
Curtright, Henry Theodorick	Columbia.
Cummins, Thomas Addison	Millwood.
Daniel, Charles Delmar	Osceola.
Davies, Mrs. Elizabeth	Bolivar.
Davies, Joseph Washington	Bolivar.
Diggs, Marshall	Montgomery City.
Diggs, Thomas Pleasant	Montgomery City.
Douglass, William Wirt	Columbia.
Douglass, Fanny Duncan	Columbia.
Ellis, William Henry	Metz, Vernon Co.
Evans, Silas Deans	Columbia.
Evans, Tyson Dines	Columbia.
Evans, Lanius	Columbia.
Ellis, William Henry	Mt. Vernon.
Forbes, Benjamin Franklin	Cassville, Wis.
Frazier, John Henry	Hillsboro.
Frissell, Thomas Taylor	Oak Ridge.
Garth, Thomas Jefferson	Columbia.
Graves, Jonathan Jacob	De Witt.
Gregory, Gilchrist Porter	Readville.
Handley, John Morris	Aullville.
Herbert, Thomas Luther	New Cambria.
Hickman, John Gay	Columbia.
Higgins, Ward Artemus	Meramec.
Holloway, Frank Washington	Manchester.
Houston, Stephen Stafford	St. Louis.
Jackson, James Rily	Columbia.
Jordan, Leo Clifford	Cahokia.
Koch, John William	St. Louis.
Lemon, Walter Thomas	Columbia.
Lenoir, William Edward	Columbia.
Love, Andrew Hawkin	Salem.
Matlock, William Michael	Clifton Hill.
Maupin, Joseph Hickman	Columbia.
May, John Robert	Union.
McKim, William Morton	Columbia.
McGirk, Taylor	Highland.
McKay, Florence Evelyn	Columbia.

McVay, Martin	Centralia, Kas.
Miller, William Wellington	Metz, Vernon Co.
Moore, Charles Duncan	Columbia.
Morrisson, Charles Carrol	New Madrid.
Moss, Daniel Dorsey	Columbia.
Mitchell, Richard Harlan	Seneca City.
Mitchell, James Lindley	Cedarville.
Mitchell, John Frank	Seneca City.
Mitchell, Charles Garth	St. Louis.
Mittelback, William	Boonville.
Newland, John Clifton	Waverly.
Newland, William Walter	Waverly.
Nix, Warren	Lockhart, Texas.
Parker, Oliver Bass	Columbia.
Payne, Willie Elbridge	Clinton.
Planck, John Marion	Smith City.
Pollock, Francis	Jefferson City.
Ranney, William Alexander	Cape Girardeau.
Ransburgh, John Eckland	New Madrid.
Renshaw, Robert	Cave Spring.
Roberts, James Edward	Robertsville.
Rollins, Frank Blair	Columbia.
Rollins, Flora	Columbia.
Rollins, Eddie Tutt	Columbia.
Sappington, John Tyrie	Sappington.
Schooley, James Henry	Austin.
Scott, Adolphus Gustavus	Columbia.
Scott, John Thomas, Jr	New Madrid.
Schwabe, John	Columbia,
Shepherd, Clara Ellen	Wellsville.
Singleton, De Pat	Columbia.
Simpson, Tucker Jephthah	Martinsburg.
Standley, Joseph William	Carrollton.
Standley, May	Carrollton.
Stapleton, Francis Marion	Fayette.
Stiff, Edward Henry	Rolla.
Stone, John Houston	Knoxville.
Steuart, Cortez	Montgomery City.
Swain, Thomas Byron	Chillicothe.
Taylor, John Marion	Holden.
Thies, William Frederick	St. Louis.
Thompson, Joseph Alexander	New Madrid.
Thomson, Robert J	Columbia.
Thomson, William Simpson	Millville.
Todd, Nathan Hall	Columbia.
Turner, Charles Rogers	Columbia.
Vincil, Robert Baxter	Columbia.
Wadell, Oscar Sylvanus	Warrensburg.
Watson, Robert Huston	Cave Spring.
Waters, Richard Graham	Columbia.
Willis, Charles Clarence	Columbia.

Wills, James Monroe	Lamar.
Williams, Charles Washburn	Columbia.
Yows, James Marshall	California.

SCHOOL OF MINES, ROLLA.

FIRST YEAR STUDENTS.

Amsden, Otto B	Cuba.
Duncan, G. A	Arlington.
Gill, John Holt	York Station.
Godwin, Millard	Rutledge, Tenn.
Pack, John W	Rolla.
Richardson, George	Rolla.
Taylor, Edward C	Rolla.
Williams, H. A	Little Piney.

SPECIAL STUDENTS.

Dentlinger, J. J., (Blow-pipe Analysis)	Rolla.
Smith, B., (Assaying)	Boulder.
Wertman, J. S., (Blow-pipe Analysis)	Rolla.

PREPARATORY STUDENTS.

Boyd, James F	Oregon.
Deegan, Francis J	Rolla.
Gerrish, David A	Rolla.
Hall, Parkhurst E	Rolla.
Hoskinson, G. M	Rolla.
Love, George L	Rolla.
Minger, William	Rolla.
Norman, John S. F	Oregon.
O'Brien, John	Rolla.
Schleer, Peter	Rolla.
Scott, Homer E	Rolla.
Stiff, Abram L	Faxton.
Tipton, Isaac N	Rolla.
Toomey, Joseph	Rolla.
Webber, Columbus	Rolla.
Wilson, Fred	Rolla.
Wilson, Jackson	Rolla.

SUMMARY.

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DEPARTMENT OF MENTAL, MORAL AND POLITICAL PHILOSOPHY.

THE PRESIDENT.

SENIOR YEAR.

First Semester.—Mental Philosophy, Haven as the Text-book, with Lectures. Hamilton's Metaphysics.

International and Constitutional Law, Kent's Commentaries, with Lectures.

British Constitution, Creasy as the Text.

Second Semester.—Political Economy, Wayland and Bowen as Text-books. Compendium of the Census for 1870, on progress of Wealth and Population of the United States.

Moral Philosophy, Haven as furnishing outline of Topics, select portions of Paley, Blackstone and Kent, required to be read.

GENERAL REVIEW.

Every student must be examined on this entire course at the close of the year prior to his graduation; and no student from other Colleges will be admitted *ad eundem*, so far as to excuse him from examination on these subjects at the final examination for his degree.

The method of instruction is by examination on text-books, by class discussions, by formal lecture from the Professor, by the student himself becoming the lecturer, and in his own language presenting the topic, and by written essays and analysis.

The instruction is intended to be as little as possible dogmatic; and the method adopted is designed to make the student himself the inquirer and thinker, and to teach him the right method of using books for investigation.

The President also gives a course of instruction in the Law Department.

DEPARTMENT OF NATURAL SCIENCE.

JOSEPH G. NORWOOD.

The course of instruction in this Department is given to the regular Sophomore and Junior Classes, and such irregular students as may desire to study Physics and Chemistry, in lieu of some branch in the regularly organized classes. Certain branches of Natural History are also taught in this Department, viz: the seniors receive instruction in Anatomy and Physiology, human and comparative, Biology and Zoology.

SOPHOMORE YEAR.

The course of instruction for the Sophomore year embraces, during the first semester, the elements of Physics. The branches particularly attended to are Heat, Light, Statical and Dynamical Electricity, Magnetism, Electro-magnetism and Pneumatics.

The second semester is devoted to Elementary Chemistry. Every effort is made to render the course of instruction in Chemistry equal to that given in the best colleges in this country, and in accordance with modern doctrines. The principles of the science are abundantly illustrated by experiments.

Throughout the entire course the application of Chemistry to the arts, to mechanical and manufacturing pursuits, to agriculture, and to pharmacy, is constantly brought before the student, in connection with each element and its compounds.

JUNIOR YEAR.

This year is devoted to the study of the metals and their compounds, together with Organic Chemistry. To such members of the class as are qualified to receive it, instruction will be given in Qualitative Analysis, upon their complying with the rules governing the analytical laboratory. During this course special attention is paid to Toxicology. Every mineral poison is studied, so far at least as the tests for its presence and the appropriate antidotes are concerned.

The general principles of Agricultural Chemistry and of Meteorology are discussed, and experimentally illustrated, in connection with the studies already named, during the Sophomore and Junior years. To advanced Agricultural students, opportunity will be afforded for laboratory practice and the use of apparatus.

SENIOR YEAR.

All of the first semester and a part of the second are devoted to the study of Natural History. The branches receiving special attention are Anatomy, human and comparative; Biology and Functional Physiology and Zoology. In addition to the facilities for demonstrating Anatomy heretofore at the command of the Department, I have made arrangements with a gentleman devoted to such studies, by which our lecture table will be supplied, as it is needed, with properly prepared anatomical material. This will enable us to demonstrate, in a satisfactory manner, every tissue and organ of the human body. With these advantages, the course of instruction in Anatomy in the State University will not differ materially from that given in Medical Colleges, and will render the institution peculiarly adapted to the education of those who intend to study medicine after they leave the University.

The course of Physiology is, in all respects, such as is generally given to classes devoted to medical studies alone. In addition to Human Physiology, as much attention as possible is given to Comparative Physiology. This kind of instruction is peculiarly valuable to the farmer and the stock raiser. Constant reference is also made, throughout the course, to the minor Surgery of different parts, a sort of knowledge for the lack of which many valuable lives have been lost.

To such members of the class as desire it, instruction will be given in Quantitative Analysis, in accordance with the rules of the Laboratory.

Any qualified student may, by special arrangement, pursue Laboratory practice during the entire college year.

DEPARTMENT OF MATHEMATICS, MECHANICAL PHILOSOPHY AND ASTRONOMY.

JOSEPH FICKLIN, A.M.

The studies in this department are pursued in the following order:

FRESHMAN CLASS.

First Semester.—Algebra completed.
Second Semester.—Geometry.

SOPHOMORE CLASS.

First Semester.—Plane and Spherical Trigonometry, Mensuration, Surveying and Navigation.
Second Semester.—Analytical Geometry.

JUNIOR CLASS.

First Semester.—Differential and Integral Calculus.
Second Semester.—Mechanics, Hydrostatics, Sound and Light.

SENIOR CLASS.

First Semester.—Astronomy.

The adjustment and use of the Quadrant, Compass, Leveling Instrument, and Theodolite, are fully explained and illustrated by practice in the field.

Students in Astronomy, after mastering the theory of the subject in the recitation room, are required to go to the Observatory and apply their theories to practice in the determination of Latitude, Longitude, Right Ascension, time of day, Variation of the Magnetic Needle, etc.

Special attention is given to the mental discipline of the student. The development of the intellectual powers, and the formation and cultivation of correct habits of thinking and reasoning, by a constant reference to the Logic and Philosophy of Mathematics, are made the paramount objects of every recitation.

Prominence is also given to the great *practical* utility of Mathematics. As far as possible, every principal demonstrated is also illustrated by some useful application of it to the arts.

The recitations are conducted with the aid of well selected text-books, and such additional illustrations and explanations as may be necessary are given, in order to impart to the student a thorough philosophical and practical knowledge of all the subjects taught.

Original problems in the various branches are given to the student to test his knowledge of the subject, and to make him self-reliant and independent.

During the course, lectures are delivered on the Philosophy, Utility, and History of Mathematics.

Special attention is called to the requirements in the Pure Mathematics, for admission to the Freshman class. Imperfect preparation in Algebra is so common as to compel the conviction that sufficient attention is not given to this branch of Mathematics in the Preparatory Schools. Its importance cannot well be over-estimated.

DEPARTMENT OF ANCIENT LANGUAGES.

REV. JOHN PACKER, A.M.

This department seeks, by the critical study of the most approved Greek and Latin Classics, and by practice in writing Greek and Latin prose, to so familiarize the student with the structure and genius of the ancient languages, that he can open for himself the treasure-house of ancient thought and feeling. The classics are further utilized as a means to a better understanding of the genius and structure of our tongue, by indicating the points of similarity and dissimilarity in construction and expression between that and the classic tongues, and as the source of a large part of our vocabulary. The practical features of Greek and Roman life, together with Mythological, Historical and Geographical allusions, are made matters of careful study.

PREPARATORY STUDIES.

Requirements for entering the Freshman Class:

LATIN—Harkness' Latin Grammar, complete; Four Books Cæsar's

Commentaries; Sallust's Catilinian Conspiracy; Four Books Virgil's Æneid; Cicero's Select Orations, or equivalents.

Greek—Hadley's Greek Grammar, complete; Harkness' First Book in Greek; Kendrick's Greek Ollendorf; First Three Books of Xenophon's Anabasis, or equivalents.

FRESHMAN YEAR.

First Semester.—Latin—Livy (Prose Composition, Arnold's).

Greek—Herodotus (Owen or Harper's Texts), or Selections from Greek Historians (Felton).

Second Semester.—Latin—Cicero De Amicitia et De Senectute. Prose completed.

Greek—Iliad (Boise), Odyssey (Owen).

SOPHOMORE YEAR.

First Semester.—Latin—Select Comedies and Satires—Terence, Juvenal, Horace and Plautus.

Greek—Demosthenes' Select Popular Orations; or Demosthenes on the Crown (Champlin); or Æschines; Prose Composition (Boise).

Second Semester.—Latin—Cicero's De Contemnenda Morte (Chase).

Greek—Xenophon's Memorabilia (Robbins); Prose Composition completed.

JUNIOR YEAR.

First Semester.—Latin—Select Odes and Epistles of Horace.

Greek—Select Tragedies—Æschylus, Sophocles (Woolsey), Euripides.

Second Semester.—Latin—Tacitus Germania or Histories (Tyler).

Greek—Plato, Dialogues—Georgics (Woolsey), or Apology (Tyler).

CLASSICAL WORKS OF REFERENCE.

The following works are recommended as almost indispensable helps in the study of the Classics:

Hadley's, Crosby's or Kuhner's Greek Grammar.
Goodwin's Greek Moods and Tenses.
Harkness' or Zumpt's Latin Grammar.
Liddell and Scott's Greek Lexicon.
Andrew's or Bullion's Latin Grammar.
Smith's or Anthon's Classical Dictionary.
Smith's Greek and Roman Antiquities.
Long's Classical Atlas, or
Kiepert's Atlas der Alten Welt.
Smith's History of Greece.

Liddell's History of Rome.

Felton's Greece, Ancient and Modern.

Chase and Stuart's series of Latin Texts are recommended in preference to all others, for the general excellence of their paper, type and binding, and specially for the conscientious scholarship of their notes, as well as for their extraordinary cheapness.

THE DEPARTMENT OF MINERALOGY, GEOLOGY AND BOTANY.

PROF. G. C. SWALLOW, A.M., M.D.

PHYSICAL GEOGRAPHY

Is taught by a combination of Recitations and Lectures, illustrated by maps, minerals, plants, animals and fossils.

This study is placed at the close of the course of education, that all the sciences may lend their aid in rendering the long catalogues of scientific terms used, so hard and meaningless to the uninitiated, an illuminated history of nature.

Geology and Palæontology are presented in their cosmical relations.

Hydrography in the dynamics of water and water-sheds.

Meteorology, including the philosophy of wind, rain and temperature, is considered in its relations to the structure and history of the earth.

Natural History, in its chronological changes and geographical relations.

Ethnography is taught in its relations to the origin, geographical distribution, and characteristics of the races of man.

Astronomy, as presenting the system of the Universe.

MINERALOGY AND GEOLOGY.

Our means for teaching Mineralogy and Geology are ample. The collection of the Geological Survey of Missouri, and the private collections of Drs. Norwood and Swallow, afford ample means for a full and complete illustration of all the departments of this science, which is so taught as to give the student a practical knowledge of the whole subject, by a full and complete course illustrated by numerous maps, sections and charts, and by visits to important localities.

BOTANY

Is taught by a combination of lectures and recitations, which are illustrated by numerous specimens of living and dried plants, paintings and drawings of rare plants, and figures showing the form and structure of their various organs.

The structure, physiology and classification of the vegetable kingdom receive careful attention.

A part of nearly every recitation is devoted to the analysis of plants. In these exercises the student is expected to take an unknown plant and trace it through its class, order and genus, to its species.

DEPARTMENT OF ENGLISH LANGUAGE AND LITERATURE.

JAMES W. ABERT, A. M.

Students for admission to the Collegiate Department, either Classical or Scientific, will be examined upon English Grammar and Analysis, United States History and General History.

In the Preparatory Course, Anderson's United States History and Anderson's Manual of General History are used.

The Freshmen Class, during the first semester, study Rhetoric, with frequent exercises in composition and criticism. During the second semester, the class take up Elocution, with practice in reading from the best English Classics, with practical exercises in classification, punctuation and inflection of sentences.

Throughout the year this class has weekly exercises in composition.

The Junior Class study Coppee's Logic and Shaw's English Literature.

Particular attention is given to the practical matters of speaking and writing in the

RHETORICAL EXERCISES.

On Friday of each week, all the classes meet in the Chapel, in charge of the Professor of English Language and Literature, to listen to Orations from the Senior Class, Essays and Declamations from those of the lower classes.

Essays and Orations are examined and carefully criticised by the Professor before they are delivered.

Declamation and rehearsal privately before the Professor by all who wish.

It is the aim of the department to give good power of expression in both writing and speaking to all who choose to avail themselves of the advantages offered. Enthusiasm is awakened by requiring all efforts to be made before the whole body of students, and by prizes awarded among competitors selected for regularity and proficiency, and appearing at a special exhibition on the evening preceding commencement day.

From the Report of Board of Curators.

"But there is the study of our English language (with its grand and ennobling literature), which must be provided for in the amplest manner, whatever other language, ancient or modern, is neglected—the study of our own vernacular in its origin, history and progress—in its philosophy—its synonymes, its characteristics, its power, its comparative excellencies—the study of its rythm—its nice turns and elegancies of expression. To this study will belong the critical reading of our great historians, poets and orators—the reading and analysis, word by word, and line by line, and sentence by sentence, of our master writers. It is very strange that our language is, in the proper sense, so little studied, when we consider that it is the noblest vehicle of human thought and feeling, spoken by a hundred millions of people, a tenth part of the inhabitants of the globe, and that part upon which human destiny most depends—the language, too, of political liberty and of the highest ethics.

"There is no good reason why Milton or Shakspeare, or Gray, and some of the best prose writers, should not be studied and analyzed with the same severe attention which is given to the Greek and Latin classics. The mental discipline would not be less; and such is the variety of sources from which our words come, that there would be required equal investigation, and even greater and more varied learning.

"To perfect the scientific examination of English, the Anglo-Saxon, out of which it has grown, should be studied. This, with the numerous helps which have been provided in late years, will be a matter of no great difficulty to the diligent student.

"The success and influence of educated men in all countries, and especially our own, depend almost entirely upon their power to write and speak their own language well.

"The study of composition is a difficult one, and to be a good writer is, in fact, to be a good thinker. It is the latest accomplishment of the scholar, or rather the result and consummation of all scholarship. Whately, in his Rhetoric, condemns the ordinary writing upon themes by school-boys as almost wholly useless. The wise and thoughtful professor can, however, by judicious criticism, by furnishing subjects, and often matter, to a greater or less extent, lead the student to the practice and love of writing."

MODERN LANGUAGES.

Instruction in German has during the past year been mainly conducted by Miss Mary B. Read. The number of students in the language has increased to seventy-one, divided into classes of three grades.

Instruction in French has been given by Prof. Abert, since the first of January.

We again quote from the report before referred to:

"Not rejecting the culture of the ancient languages, we surely cannot pass by or neglect that of the principal European languages, and especially the German and French. Ample provision is now made for the study of these languages, with the literature belonging to them, in most of the principal schools in the country of every kind. They are made a requirement, not only in the colleges of letters, but equally so in the scientific and technical schools. In the earlier part of the present century, the modern languages were not considered necessary for the professional man, and if any provision whatever was made for them, it was accidental and temporary, and never from the permanent fund of the institution. But the changed relations of the world have produced the change referred to in our various institutions of learning. In Cornell University, for example, there are no less than three professors of German, two of French, and one even of Chinese. In Harvard, there is now provided for this department a professor, an assistant professor, and two tutors. In Michigan University, there is first the full professor, and then an assistant in the French, and one also in German.

"The requirement should be imperative upon graduates of both the scientific department and that of arts, that they should be able to read the German and French; and that in the elective courses to be provided, these languages be made optional for longer courses. The committee so recommend.

"In regard to linguistic studies in general, your committee beg to submit, that they must be sufficiently provided for in our University system; at first, indeed, not so extensively as will be required after a time. The Latin, Greek, French, and German, are indispensable now, and few would regard the University complete without the Italian and Spanish. While we certainly reject the one-sided course which makes Latin and Greek the whole of a *liberal* education, we do not forget that the most lasting monuments of our race are the languages which they have created.

"When not a vestige shall be left of the Pantheon or the Parthenon, the words of Homer and Virgil, of Plato and Cicero, will remain a possession to our race forever. And if we can conceive the time when not a stone of St. Paul or Westminister Abbey shall remain, the time can never come, so long as human beings exist, when Hamlet and Othello, the Paradise Lost and Pilgrim's Progress, shall have perished and been forgotten. We here find embedded the deepest philosophies and sympathies of our race, and these great masters must be a study for all time."

DEPARTMENT OF CIVIL ENGINEERING.

MAJ. J. W. MAC MURRAY, U. S. A., PROF.

By a resolution of the Board of Curators, the degree in Engineering will be conferred upon any student who completes and passes a satisfactory examination upon the following subjects, viz: Algebra, Geometry, Trigonometry, SURVEYING, Navigation, Mensuration, Analytical Geometry, Calculus, Mechanics, Astronomy, Chemistry, Mineralogy, Geology, Descriptive Geometry, CIVIL and Military ENGINEERING, and Tactics.

The course in Civil Engineering embraces full instruction in regard to the construction of common roads, pikes, gravel roads, railroads, bridges, canals, slack water navigation, improvements of rivers, harbors, etc.

Instruction in Surveying is of the most practical character, embracing every variety of field work.

For students in the Agricultural Department a special course is designed, embracing the simpler methods of farm surveying and practical farm engineering, and

FARM ARCHITECTURE,

including farm houses and out-buildings, bridges, fences, etc.

The *uses* and *adaptations* of farm houses and farm buildings.

The comfort and health, and consequent thrift, of men and all domestic animals, depend very much upon the manner they are housed.

ROADS, WALKS AND PATHS

will have special attention. The modes of laying out and constructing them must be well understood. A road well made is durable and economical; but a road badly constructed is worse than a natural road. We formerly lost money by making no roads; we now lose it by making poor roads.

FENCES.

Fences, whether of stone, wood, earth, or living plants, should be well understood.

Fences are the one most expensive item in farming. Economy and thrift in this are necessary to good farming.

UNDER-DRAINING.

The principles on which it is based, showing where it is needed, and the best modes of constructing the drains.

SUPPLIES OF WATER.

The construction of wells, cisterns and ponds.

Machinery for raising and conveying water.

LANDSCAPE GARDENING.

He can work better and sleep better, who has well-kept lawns and beautiful perspectives. They are pleasant things to have, and more pleasant to understand.

INSTRUCTION IN BUILDING BRIDGES AND CULVERTS.

The best material for them, and methods of utilizing any materials at hand.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS.

MAJ. J. W. MAC MURRAY, FIRST ARTILLERY, U. S. A.

Under the head of Military Science, is embraced full and complete instruction in regard to the construction of Temporary or Field Fortification, attack and defense, duties of guards, outpost and picket service; manufacture of gun powder, gun cotton and other explosives; metallurgy of gun metals; construction and uses of guns; implements, ammunition, pyrotechnics, theory of fire.

Military history, operations of war, laws and effects of war.

The pursuit of these various branches is optional with the student, but *practical instruction in the school of the soldier, company and battalion*, is enjoined upon all, unless, under peculiar circumstances, excused therefrom by the Faculty.

The following is the action of the Board of Curators:

> "*Resolved*, That all Students of the University be required to enter the Military Department, unless excused by a vote of the Faculty, on the recommendation of the Military Professor."

By resolution of the Faculty, any student desiring to be relieved from duty in this department must present his excuse, in writing, to the Military Professor, who will present the matter to the Faculty.

The following uniform has been prescribed by the Board of Curators, viz: Dark blue coat, English patrol jacket, two rows State buttons; trimmings, scarlet. Gray pants, scarlet welt in seam; cap, dark blue, trimmed with scarlet. Pompon, 1¼ inch diameter.

All students are required to provide themselves with this uniform, unless excused by the President. A very neat and serviceable suit can be obtained here for from $20 to $25, to be worn at drill and elsewhere, thus avoiding the wear of other more expensive clothing.

In attendance upon the drills, students lose no time from their appropriate studies. The drills are short, and the military duty required of students involves no hardships or fatigue. The Military drill is a health-giving exercise, tending in a great measure to the development of the *physique* of students.

The entire body of students is divided into companies; each company is officered by one Captain, one First Lieutenant, one Second Lieutenant, with a proper number of Sergeants and Corporals. The officers and non-commissioned officers are distinguished by appropriate insignia of rank.

The commissioned officers are selected from those students most proficient in drill.

These appointments are conferred by the President of the University as honorary distinctions, and are continuous for the collegiate year, unless forfeited by misconduct.

By the act of Congress for the endowment of agricultural and mechanical colleges, in prescribing the required studies, the words "*including* military tactics" are used. The grant act should be faithfully complied with, so far as means will permit. Both the drill and the instruction are most useful in forming the cultivated man. Occasions also arise in human society when these instructions become of the highest possible value. It is the part of a State University to provide men for all the exigencies of the commonwealth—for war as well as for peace. But without any reference to that greatest of social calamities, war, military exercises and training have an educational value, in perfecting the man in his *physique* and bearing, not to be supplied in any other way.

COURSE IN ARTS.

Pupils to enter the Freshman Class must pass a strict and satisfactory examination in Reading, Writing, English Grammar, Geography, Outlines of History, Arithmetic and Algebra (Loomis'), to Equations of the Second Degree; "Latin grammar, Latin Prose Composition, First three books of Cæsar's Commentaries, the four Orations of Cicero against Catiline, Virgil's Georgics, and the first six books of the Æneid; Greek Grammar, Greek Prose Composition, the first three books of Xenophon's Anabasis, and the first book of Homer's Iliad."

FRESHMAN YEAR.

First Semester.—Algebra (Loomis'), finished, Rhetoric and Composition, Livy and Latin Prose Composition, Herodotus.

Second Semester.—Geometry, Elocution (Sargent's Standard Speaker), Botany and Drawing, Plautus and Terence, Homer and Composition in Greek.

SOPHOMORE YEAR.

First Semester.—Trigonometry, Surveying and Navigation, Horace, and Composition of Latin Poetry, Demosthenes, with written translations, Physics, French or German, History.

Second Semester.—Analytical Geometry, Juvenal and Cicero's Philosophical Works, Sophocles and Theocritus, German or French, Chemistry of non-metallic Elements, History.

JUNIOR YEAR.

First Semester.—Analytical Geometry, Horace and Plato's Dialogues, Logic (Coppee), Chemistry of Metals, Evidences of Christianity (Lectures).

Second Semester.—Mechanics, Chemistry of Metals, Tacitus and Plato's Dialogues, English Literature (Shaw), Analyses, (Optional).

SENIOR YEAR.

First Semester.—Astronomy, Mental Philosophy (Haven), International and Constitutional Law (Kent), British Constitution (Creasy), Anatomy and Physiology, Mineralogy and Palæontology.

Second Semester.—Political Economy (Wayland and Bowen), Moral Philosophy (Haven), Anatomy and Physiology, Geology and Physical Geography, Natural Theology (Lectures), Zoology.

☞ **English Compositions and Declamations through the first three years, and Original Orations in the Senior Year.**

COURSE IN SCIENCE.

Candidates for admission to the Freshman Class must pass a satisfactory examination on the following studies:

Mathematics—Arithmetic, Algebra to Equations of the Second Degree.

English Language—English Grammar and Analysis, United States History, and Geography.

German—Grammar and Reader.

The examination will be upon *principles* without regard to authors.

FRESHMAN CLASS.

First Semester.—Algebra, completed, Rhetoric and Composition, French and German, Elementary Drawing.

Second Semester.—Plane and Solid Geometry, French and German, Elocution and English Literature, Botany.

SOPHOMORE CLASS.

First Semester.—Plane and Spherical Trigonometry, Mensuration, Surveying and Navigation, Philosophy of Language, Physics, French.

Second Semester.—Analytical Geometry, Chemistry of non-metallic Elements, History, Spanish (Optional).

JUNIOR CLASS.

First Semester.—Differential and Integral Calculus, Logic and Polemics, Chemistry of the Metals, Evidences of Christianity.

Second Semester.—Mechanics, Hydrostatics, Sound and Light, Chemistry of the Metals, Descriptive Geometry, French or German (Optional).

SENIOR CLASS.

First Semester.—Astronomy, Mental Philosophy and Metaphysics, International and Constitutional Law, British Constitution, Anatomy and Physiology, Mineralogy and Palæontology, Orations.

Second Semester.—Moral Philosophy, Political Economy, Anatomy and Physiology, Zoology, Geology and Physical Geography, Natural Theology, Orations.

COURSE IN LETTERS.

See Table of Recitations and Lectures.

The Preparatory Course is the same as that of Arts.

COURSE IN PHILOSOPHY.

See Table of Recitations and Lectures.

The Preparatory Course is the same as that in Arts, substituting German for Greek.

COURSE IN ENGINEERING.

See Table of Recitations and Lectures.

Preparatory Course is the same as that in Science.

SYNCHRONISTIC TABLE OF

IN THE SEVE

YEAR.	COURSE IN ARTS.	Hour	COURSE IN SCIENCE	Hour	COURSE IN LETTERS.	Hour
FRESHMAN. FIRST SEMESTER.	Algebra Rhetoric Latin Greek Drawing	II. III. IV. I. VI.	Algebra Rhetoric German French Drawing	II. III. V. VI.	Algebra Rhetoric Latin Greek Drawing	II. III. IV. I. VI.
SECOND SEMESTER.	Geometry Elocution and English Language Latin Greek Botany—optional	II. III. IV. I. I.	Geometry Elocution & Language German French Botany	III. III. V. I.	Geometry Elocution & Language Latin Greek Botany—opt	II III. IV. I. I.
SOPHOMORE. FIRST SEMESTER.	Trigonometry Latin and Greek Physics German or French History—opt	I. III. II. IV. VI.	Trigonometry Philosophy of Language Physics French History—opt	I. II. IV. VI.	Trigonometry Greek and Latin Physics French History	I. III. II. IV. VI.
SECOND SEMESTER.	Analytical Geometry Latin and Greek German or French Chemistry History—opt	I. III. IV II. VI.	Analytical Geometry French Chemistry History—opt	I. IV. II. VI.	Latin and Greek French Chemistry History	III. IV. II. VI.
JUNIOR. FIRST SEMESTER.	Logic and Polemics Latin and Greek Chemistry of Metals German or French Evidences of Christianity	I V. II. IV. VI.	Logic and Polemics Calculus Chemistry of Metals Spanish—opt Evidences of Christianity	I. III. II. IV VI.	Logic and Polemics Greek Chemistry of Metals Spanish—opt Evidences of Christianity	I. V. II. IV. VI.
SECOND SEMESTER.	Mechanics Latin and Greek German or French, op. Chemistry of Metals	III. V. IV. II.	Mechanics Chemistry of Metals Spanish—opt Descriptive Geometry	III. II. IV. I	Greek Chemistry of Metals Spanish—opt English Classics Greek Philosophy	V. II. IV.
SENIOR. FIRST SEMESTER.	Astronomy Mental Philosophy, Constitutional and International Law Anatomy & Physiology Mineralogy and Palæontology	V. I. IV. II.	Astronomy Mental Philosophy Constitutional and International Law Anatomy & Physiology Mineralogy and Palæontology	V. I. IV. II.	Element'y Astronomy Mental Philosophy, Constitutional and International Law Anatomy & Physiology Mineralogy and Palæontology	V. I. IV. II.
SECOND SEMESTER.	Moral Philosophy, Political Economy Anatomy and Physiology, Zoology Geology and Physical Geography Natural Theology	I. IV. II. VI.	Moral Philosophy, Political Econmy Anatomy and Physiology, Zoology Geology and Physical Geography Natural Theology	I. IV. II. VI.	Moral Philosophy, Political Economy Anatomy & Physiology, Zoology Geology and Physical Geography Natural Theology	I. IV. II. VI.

RECITATIONS AND LECTURES

AL COURSES.

COURSE IN PHILOSOPHY.	Hour	COURSE IN ENGINEERING.	Hour	COURSE IN AGRICULTURE.	Hour	NORMAL COURSE.	Hour
gebra ietoric tin rman awing	II. III. IV. V. VI.	Algebra Rhetoric Latin—opt German Drawing	II III. IV. V. VI.	Algebra Rhetoric Theory and Practice of Agriculture Drawing—opt	II. III. V. VI.	Algebra Rhetoric Art of Teaching Analytical Grammar Drawing	II. III. VI.
ometry ocution & Language tin rman and French story tany—opt	II. III. IV. V. VI. I.	Geometry Elocution & Language German French Botany	II. III. V. I.	Geometry Elocution and English Language Theory and Practice of Agriculture Botany	II. III. V. I.	Geometry Physical Geography & Natural Philosophy Science of Government History Latin	II. III. VI. I.
igonometry tin ench ysics ilosophy of Language	I. III. IV. II. 	Trigonometry Surveying French Physics Philosophy of Language—opt	I. I. IV. II. 				
alytical Geometry tin anish or French emistry story	I. III. IV. II. VI.	Analytical Geometry Chemistry Spanish or French Shades and Shadows	I. II. IV. VI.				
gic and Polemics tin emistry of Metals anish or French idences of Christianity	I. V. II. IV. VI.	Logic and Polemics Calculus Chemistry of Metals Spanish or French Evidences of Christianity	I. III. II IV. VI.	Trigonometry and Surveying Theory and Practice of Agriculture Physics Evid's of Christianity	I. IV. II. VI.	Trigonometry and Surveying Latin German or French	I. III. IV
chanics tin emistry of Metals scriptive Geometry-opt	III. V. II I.	Mechanics Civil Engineering Chemistry of Metals Descriptive Geometry	III. V. II VI.	Mechanics Theory and Practice of Agriculture Chemistry	I. IV. II.	Theory and Practice of Teaching Chemistry Botany Latin German or French	VI. II. I. III. IV.
tronomy ntal Philosophy ernational & Constitutional Law atomy& Physiology neralogy and Palæontology	V. I IV. II.	Astronomy Mental Philosophy Military Engineering Anatomy& Physiology Mineralogy, Palæontology and Lithology	V. I. VI IV II.	Astronomy Mental Philosophy Agricult'al Statistics Theory and Practice of Agriculture Mineralogy and Palæontology	V. I. III. II.	Astronomy—elem'tary Latin German Philosophy of Education Mental Philosophy	V. II. IV. VI. I.
ral Philosophy itical Economy atomy & Physiology logy logy and Physical Geography ural Theology	I. IV II. VI.	Moral Philosophy Political Economy Anatomy and Physiology Zoology Geology and Physical Geography Natural Theology	I. IV. II. VI.	Political Economy Moral Philosophy Theory and Practice of Agriculture Geology and Physical Geography Evidences of Christianity	I. III. II. VI.	Theory and Practice of Teaching Zoology Moral Philosophy Geology	VI. IV. I. II.

ORDER OF COURSES,

AS RECOMMENDED BY THE COMMITTEE OF ORGANIZATION.

The committee present the following courses as allowing large freedom of choice, and at the same time indicating a specific University honor to be attained in each. The courses first indicated lead to the highest academic honors, requiring, each of them, a wide and general culture; and, it is to be presumed, will be held by students in nearly or quite equal honor. They will be pursued in large part in the same classes, bearing the same designation; and where there is a divergence, the students will go to professors already provided in the University. These courses are substantially those of Cornell, and agree mainly with those of Michigan and Wisconsin. Each should embrace the same period of time for its accomplishment (four years); unless, indeed, it be thought best, as a temporary arrangement, to adjust the scientific course to three years, as at present:

I. The course in ARTS—leading to the degree A.B. This course embraces Latin, Greek, French and German; mathematics, natural science, political and moral philosophy, history and literature.

II. Course in SCIENCE—leading to degree of B.S. This course embraces mathematics (including calculus), natural science, excludes Latin and Greek, substitutes therefor French and German languages; includes philosophy and literature. The same approximately as the A. B. course (except as to classics); extends, however, the course in mathematical or natural science.

III. Course in PHILOSOPHY—degree, B. Ph. Combination of the courses in the Arts and Sciences; includes Latin, excludes Greek; includes modern languages, modifies the course in mathematics—less of mathematics, more of philosophy, history and literature.

IV. Course in LITERATURE — degree, Bachelor of Letters. This course embraces Latin, Greek, Modern Languages; a thorough study of English in its linguistic elements and in its literature; philosophic and historical studies; together with the elements of mathematics and natural science; but not to the same extent as required in the other courses.

The Faculty may excuse a student from any study in either of these courses, and substitute for it another of equal educational value, and better suited to the taste or objects of the student, without impairing his claim to his degree.

After the Sophomore year, an election of studies designated by the Faculty to be allowed the students.

The object is to secure the highest culture with the greatest liberty of choice, and to award specific University honors to the deserving.

V. Elective course, leading to diploma of Proficiency in studies successfully pursued.

Any student, instead of entering upon the preceding courses, may select his own course; and students thus selecting their own studies shall be known as students in the elective courses, or elective students.

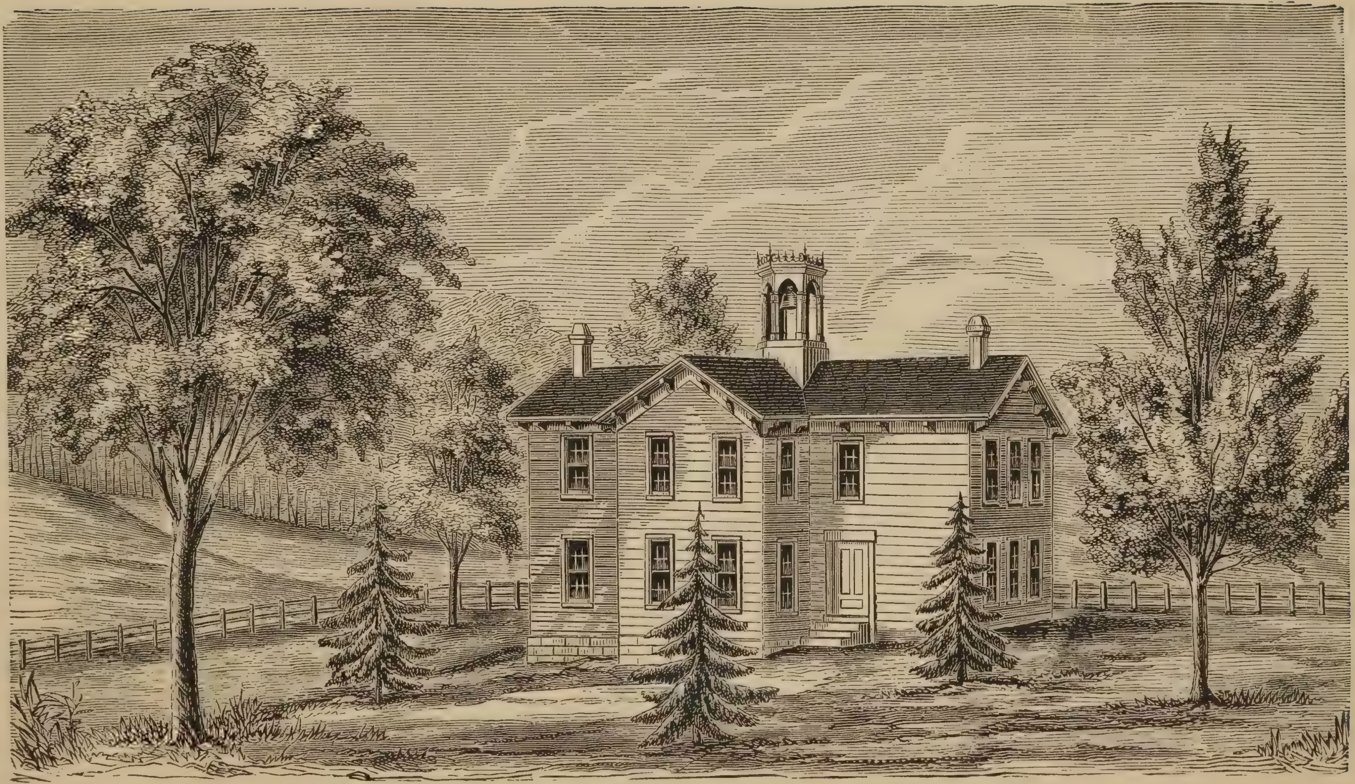
The following rules will apply to this class of students, and must be inflexibly enforced;

1 They must be qualified by previous study and discipline for the classes they propose to enter.

2. They cannot "*get up*" classes according to their own notions, but must choose such studies as are at the time pursued in some of the courses; nor can they have recitation or lecture hours changed to suit their convenience.

3. They must, in ordinary circumstances, and unless specially excused, have the full quota of studies.

4. While it is intended, as far as can be, to give the full freedom of the continental universities, this is by no means to be understood as permitting the student to pass from one course to another without good reason, and without the permission of the President.



NORMAL COLLEGE.

PROFESSIONAL COLLEGES.

COLLEGE OF INSTRUCTION IN TEACHING.

FACULTY.

DANIEL READ, LL.D.,
President of the University.
E. L. RIPLEY, A.M., PRINCIPAL,
Professor of the Theory and Practice of Teaching.
D. W. B. KURTZ, A.M.,
Assistant Professor.
MRS. C. A. RIPLEY,
Assistant.
MISS MARY B. READ,
Assistant.

The Constitution of the State of Missouri prescribes that there shall be established and maintained in the State University a department of instruction in teaching.

The Normal College, like a Law College, is a professional school. Its distinct design is to prepare teachers for their peculiar vocation. The elementary branches will be thoroughly taught and reviewed in the preparatory department, while in the Normal School proper, prominence will be given to the *principals and methods*, *the theory and practice of teaching.*

The only hope of improving our schools is by improving our teachers. Here is the very first step for the advancement of popular education; and this is the direction of effort now everywhere made on the part of its friends. Good schools through the ministration of ignorant and unskilled teachers are impossibilities. Missouri must arouse herself on this subject, or stand behind every State now moving in the line of progress and improvement.

The normal training school is the admitted and recognized agency for the improvement of the methods of teaching. The teacher is here educated with special reference to his work, and imbued with the inspiration of his calling. If but a single thoroughly trained teacher could be planted in each county of the State, the influence would soon reach every schoolhouse.

The connection of the Normal College with the University affords, through a concentration of educational facilities, many advantages not enjoyed by isolated Normal Schools. Pupils will, while pursuing studies, have an opportunity of attending such lectures and recitations of the University course as they may desire. They will also have the full benefit of Libraries, Cabinets and Societies connected with the institution.

The Committee of Organization recommend that the Normal Course proper be the Massachusetts', or that proposed by Prof. Phelps before the National Teachers' Association; and that any student, male or female, having completed this course, be admitted to the degree of Normal Graduate.

They also recommend that students having studied a more liberal course (to be determined by the President and Professor of Instruction) shall be admitted to the degree of Normal Graduate of the superior grade.

All instructions from every chair, and from the highest to the lowest, ought to be, in the strict sense, of the best style of professional excellence; if not, the professor or other instructor should not be retained in the University.

But in order to render the instructions in teaching more complete, each professor in the institution, and of every subject, may very properly be required to show specially how his subject may be best taught, and thus prepare his whole class to become teachers. In this way the whole University becomes a school for training and instructing teachers. The professor is also himself likely to teach better by being required to *teach teachers how to teach*. He then aims to become himself an exemplar and model teacher to a class of teachers.

LIST OF STUDENTS.

SENIOR CLASS.

Collison, Sue	Jonesport.
Gray, J. William Thomas	Independence.
Harrison, Andrew Turner	Richmond, Va.
Packer, Helen Adeline	Galena, Illinois.
Seward, Gertie Calhoun	Laclede.
Swinford, Samuel Thomas	Independence.
Trantham, William H. B.	Springfield.

JUNIOR CLASS.

Aldrich, Ida Dickson	Columbia.
Barton, Caleb Aker	Holden.
Cromwell, Ella	Columbia.
Fagan, Robert	Milwaukee, Wis.
Gentry, Sallie	Columbia.
Martin, Reuben Thompson	Louisiana.
Ridgeway, Joseph Thomas	Columbia.
Ripley, Julia Fisk	Columbia.

FRESHMAN CLASS.

Burris, Franklin Pierce	Mitchellsville.
Butlar, Oscar	Mitchellsville.
Carlisle, Thomas Corwin	Winchester, Ohio.
Carothers, Samuel	Clarence.
Clark, John Bullard	Hallsville.
Cook, Jacob	California.
Crew, Thomas Franklin	Humansville.
Cromwell, Mary Rebecca	Columbia.
Daily, Wilson L. Gates	Savannah.
Davis, Samuel Harris	Stockton.
Davies, Elizabeth	Bolivar.
Davies, Joseph Washington	Bolivar.
Field, John Hardin	Columbia.
Garrard, James William	Martinsburg.
Garretson, Isaiah	California.
Hall, Erasmus Calvin	Gower.
Humphrey, Theron Martin	Weston.
Jones, John Thomas	Buffalo.
Mahon, William Thomas	Linn.
McGirk, Taylor	Highland.
McMillan, Samuel H	Jefferson City.
Miller, Frederick Jacob	Butlerville.
Miller, Jacob D	Middleton.
McSchooler, Emma Eliza	Columbia.
Nichols, William Hite	Columbia.
Nowlin, Susie	Wellsville.
Orme, John Pemberton	Ash Grove.
Ruby, Thomas Carson	Macon.
Smith, Andrew Jackson	Savannah.
Staley, Mettie Victoria	Columbia.
Thompson, William S	Millville.
Varner, Laura Adam	Austin.
Walker, Thomas Winslow	Plattsburg.
Ware, Charles P	Ada.
Wells, Harry T	Greenfield.
Wheeler, Lorinda	Columbia.
Wheeler, Charles Jackson	Knob Noster.

AGRICULTURAL AND MECHANICAL COLLEGE.

FACULTY.

DANIEL READ, LL.D., President,
Professor of Political Economy and Agricultural Statistics.

GEORGE C. SWALLOW, A.M., M.D.,
Professor of Agriculture, Geology and Botany.

JOSEPH G. NORWOOD, M.D.,
Professor of Physics, Chemistry, Anatomy and Physiology.

JOSEPH FICKLIN, A.M.,
Professor of Mathematics, Mechanical Philosophy and Astronomy.

E. L. RIPLEY, A.M.,
Professor of Latin, Drawing and Book-Keeping.

Col. J. W. ABERT,
Professor of Rhetoric, English Language and Drawing.

Maj. J. WILSON McMURRAY,
Professor of Military Science and Tactics, and Farm Engineering.

CHARLES V. RILEY,
Lecturer on Entomology.

Hon. NORMAN J. COLMAN, Hon. JAMES S. ROLLINS, Hon. PAUL HUBBARD,
Farm Committee.

Mr. THOMAS MADDEX,
Farm Superintendent.

STUDENTS.

JUNIOR CLASS.

Crane, Edward Bates	California.
Craycroft, Benjamin	Syracuse.
Douglass, Jesse Brown	Lathrop.
Flood, George Edward	Columbia.
Forsha, William Frank	Glenwood.
Hayes, Scott	Springfield.
Lear, Kossuth Morton	Hannibal.
Laughlin, Napoleon Bonaparte	Wittenburg.
Leeper, Charles	Graham.

Rogers, Stephen Cawood	Lathrop.
Townsend, Joseph Longkin	Columbia.
Wills, Andrew Jackson	Lamar.

FRESHMAN CLASS.

Allen, Ephraim Walton	Mitchellsville.
Beale, John Tavnor	Eureka.
Billingsley, Whitfield Urban	Glasgow.
Bissell, Morton Sylvanus	Ada.
Brown, Walter Boyde	Harrisonville.
Burlingame, Josiah Ginn	Snow Hill.
Busey, Alfred Placeit	Weston.
Brooks, James Madison	Middle Grove.
Cass, John William	Holden.
Clark, James Alvin	Florida.
Clark, Allen	New Haven.
Chamberlain, Arthur Wallace	St. Louis.
Chase, George Nathan	Granby.
Coats, Alonzo Barnes	Walnut Hill.
Cornwell, Benj. Ledgley	Kirkwood.
Daniel, Charles Delmar	Osceola.
Drumeler, Cornelius Murell	Pevely.
Elliott, Reginald Heber	Kirkwood.
Flood, George Edward	Columbia.
Garrard, James William	Martinsburgh.
Garrard, Stephen Lewis	Centralia.
Hawn, Aaron Madison	Sumac.
Humphrey, Theron Martin	Weston.
Hulen, Calvin	Hallsville.
Johnson, William Taylor	Hallsville.
Marshall, Albert	St. Joseph.
Miller, Jacob Dee	Middletown.
Munson, Frederick Trembley	Clinton.
Moore, Judson Robbins	Manchester.
Mahan, William Thomas	Linn.
McMillan, Samuel Houston	Jefferson City.
Napier, Barnette Turner	Chillicothe.
Noble, Charles Duncan	Weston.
Orme, John Pemberton	Ash Grove.
Porter, Isaac Milton	Mt. Enterprise.
Rawson, James Cicero	Wellsville.
Rowdon, Sattertwhaite	Vienna.
Russell, Frank Lenoir	Columbia.
Riggs, Brutus	Sturgeon.
Smith, Andrew Jackson	Savannah.
Sherman, James Silas	Charlestown.
Stannus, Ephraim, Jr	Kirkwood.
Torrey, John Linn	Louisiana.
Wilson, John Henry	Pleasant Hill.
Ware, Charles Perry	Ada.

COURSE OF STUDY.

PREPARATORY.

Reading, Writing, English Grammar, Composition, Geography, History of the United States, Arithmetic and Algebra (Loomis') to Equations of Second Degree.

FRESHMAN OR FIRST YEAR.

First Semester.

HORTICULTURAL BOTANY.

Pruning—Scientific principles; objects to be gained and how accomplished; pruning implements.

Practical applications in pruning fruit, ornamental and forest trees.

Transplanting—Best time and mode.

Propagation—Botanical and chemical principles involved; modes of, with seeds, buds, bulbs and tubers.

Experiments in producing new varieties, and in cultivating native fruits.

VEGETABLE CHEMISTRY.

Farm Crops—Their analyses and composition; what is desired from the soil and what from the air; how much each exhausts the soil; what is taken from the soil and what is restored to it.

METEOROLOGY AND CLIMATOLOGY.

Temperature and Rainfall—How distributed.

Adaptations of climate to various crops and fruits; how to protect the more tender from its severities and changes.

Prognostics of weather, or how we may best know its changes.

RHETORIC—

Including *Composition and Elocution.*

ALGEBRA.

ESSAYS—

On Pruning, Transplanting and Propagating.

Second Semester.

SOILS.

Classification—By natural productions, by mineral ingredients, by chemical composition and by physical properties.

Properties—Physical and chemical, how changed and improved.

Tillage—The best modes and implements of.

Sub-soiling—When beneficial, and how best performed in various soils.

Draining—Its advantages and the best modes and implements.

KITCHEN GARDENS—

Their design, use, location and arrangement; kind of soil; culture and implements.

Garden Fixtures—Walls, hot beds, cold frames and propagating houses.

Experiments—With garden crops.

NATURAL HISTORY—

General classification.

BOTANY—

In its scientific relations.

Physiology and structure of plants.

Analyses and determination of plants.

GEOMETRY.

ENGLISH LITERATURE.

JUNIOR OR SECOND YEAR.

First Semester.

ECONOMICAL BOTANY.

Useful Plants—Botanically, economically, historically and geographically considered.

Man's Vegetable Food—How and where produced; properties and value of each article; what can be produced best at home, and what best be purchased.

Experimental Culture—Of fruits and crops grown in other countries and other climates.

DOMESTIC ANIMALS.

Anatomy and Physiology—Of the horse, ox, sheep, hog, and other domestic animals. Their natural history, including the peculiarities and uses of each; what they eat, and the crops cultivated for their food.

Animal Chemistry—Man's animal food, and the nutritive elements of each variety. The food of animals and its nutritive properties.

Essays—On the plants we cultivate, the domestic animals, and the food we eat.

TRIGONOMETRY—

Mensuration, surveying and measurement of heights and distances.

PHYSICS AND CHEMISTRY—

With laboratory practice.

Second Semester.

AGRICULTURAL CHEMISTRY.

Soils—Their analyses; their essential and accidental ingredients. What constitutes a good soil, and how poor soils may be made rich.

Fertilizers—Natural and artificial; the ingredients of each and its adaptations to soils and crops; preparation and care of.

Man's Drink—As milk, perry, cider, wine, whisky, brandy; their chemical properties, their manufacture and the machinery used.

ENTOMOLOGY.

Classification of Insects—Their history and habits; how to extirpate and prevent the depredations of the injurious, and foster and multiply the beneficial.

FRUIT CULTURE.

Orchards—Location, preparation and management.

Vineyards—Best grapes for table, and those best for wine.

Nurseries—Their culture and management.

Essays—On Fruits and Drinks, Fruit Culture, including grapes and small fruits.

SENIOR OR THIRD YEAR.

First Semester.

ECONOMICAL BOTANY.

Forestry—Influence of trees on climate and soils; their protection to man, domestic animals, gardens, orchards, vineyards, nurseries and field crops; their wood for fuel and timber; their bark, leaves and fruit.

Experimental culture of forest trees.

AGRICULTURAL ARCHITECTURE.

Farm Buildings—Houses, barns, pig, poultry; tool, wood and ice houses.

DOMESTIC ANIMALS.

Breeds—Characteristics and adaptations of each to farm economy.

Breeding—Principles and modes of producing desirable and peculiar properties.

Management of Animals—In feeding, working, and selling them.

Veterinary Surgery and Medicine, in all their varied applications to the domestic animals.

Essays on domestic animals and forestry, and farm buildings.

MATHEMATICS.

Of Acoustics, *Hydrostatics* and *Optics*.

POLITICAL ECONOMY.

AGRICULTURAL STATISTICS.

MINERALOGY.

Second Semester.

LANDSCAPE GARDENING.

Æsthetics of Nature—Laying out farms, gardens and lawns; location and arrangement of buildings.

Ornamentation by ponds, streams, fountains, plants, walks, drives, fences and bridges.

BOTANIC GARDEN.

Structures—Green-houses, Hot-houses, Pits and Propagating-houses; their structure and uses, care and management.

Propagation and culture of ornamental plants.

PESTS

of the farm and garden, both animal and vegetable.

MEADOWS

and forage plants.

PASTURES

and herbage plants.

FARM MACHINERY.

Essays on Landscape Gardening and Botanic Gardens and Machinery.

GEOLOGY.

Lithological—Structure and relations of rocks.
Chronological—Fossils and their teachings.
Economical—Uses of rocks and their mineral contents.

ASTRONOMY,

in its relations to the seasons, weather, animals and plants.

OPTIONAL STUDIES.

While all the studies of the University are open to the students of Agriculture, the following are those deemed most desirable outside of those prescribed in the course:

Latin, as the language of the science on which Agriculture is based.
German and *French* are useful as repositories of Agricultural Science.
Analytical Geometry and *Calculus.*
Evidences of Christianity.
Natural Theology.

RESIDENT GRADUATE COURSE OR FOURTH YEAR.

First Semester.

PHYSICAL GEOGRAPHY.

Geology and *Palæontology* in their cosmical relations.

Hydrography, or the dynamics of water and water-sheds.

Meteorology, or the philosophy of storms, prognostics and atmospheric dynamics.

Natural History, in its geographical and historical relations.

Ethnography, in its relations to the origin and geographical relations of the races of men.

Astronomy, as exhibiting the earth's relations to the grand system of the Universe.

VETERINARY SURGERY.

Diseases of animals and their causes, and the best remedies and proper treatment, with practical applications.

MORAL PHILOSOPHY.

EVIDENCES OF CHRISTIANITY.

RURAL ECONOMY.

The Balance Sheet of Farming; what it yields in money, food and pleasure.

The Supervision of farm work.

Farm Accounts and farm reports.

Managing Working Parties and reporting the results.

Essays on farm management.

Second Semester.

FARM MECHANICS.

Structure of farm buildings and farm machinery and implements.

Plans and *Specifications* of farm buildings.

ECONOMICAL GEOLOGY.

Discovering and working of coal and metallic deposits.

Discovering and *Testing* building materials—rocks, cements, clays and paints.

SURVEYING.

Plotting farms and ornamental grounds.

DRAWING.

Machinery, animals, plants and landscapes.

HISTORY.

Of farming, horticulture and industrial education in Europe and America.

ORGANIC CHEMISTRY.

Analyses, Qualitative and Quantitative.

NATURAL THEOLOGY.

CONSTITUTIONAL LAW.

The students in this course will be exempt from all fees, and will be expected to assist in conducting the labors and instruction of the under graduates.

COURSE IN HORTICULTURE OF ONE YEAR.

First Semester.

HORTICULTURAL BOTANY.

Propagation—Botanical and chemical principles involved; modes of, with seeds, buds, layers, slips, tubers and bulbs.

Pruning—Principles involved and objects to be gained; pruning implements; practical applications in pruning.

Transplanting—Best time and modes.

Floriculture—In all its practical relations in houses, gardens and green houses.

SOILS.

Classification and improvements of soil for horticultural purposes.

METEOROLOGY AND CLIMATOLOGY.

Second Semester.

LANDSCAPE GARDENING.

Æsthetics of Nature—Laying out of grounds; location and arrangement of buildings, lawns, gardens, orchards, vineyards, forests, meadows, fields and pastures.

Ornamentation—Arrangement and construction of lakes, fountains, streams, bridges, walks and fences; location and selection of trees, shrubs and flowers.

GARDENING.

Botanic Garden—Its arrangements and plants; hot and green houses, their structures and uses.

Kitchen Garden—Including hot beds, pits, cold frames and propagating houses.

Flower Garden—With all its necessary appliances.

FRUIT CULTURE.

Culture and management of orchard, vineyard, nurseries and small fruits.

Manufacture of wine, cider and perry.

BOTANY.

Botany is taught in its practical relations to the varied operations of horticulture.

HISTORY OF HORTICULTURE.

PRIZES.

There are two permanent prizes connected with this department:

The *Harris Medal* to the Senior Class, "For the *Best Essay on Dairy Stock.*"

The *Swallow Prize* to the Freshman Class, "For the *Best Examination on Pruning.*"

Mr. Barr has also offered a prize to the Freshman Class "For the *Best Essay on Grape Culture in Missouri*."

DEGREES GIVEN IN THE AGRICULTURAL COLLEGE.

Students who have finished the *three years' course* shall be entitled to the degree of Bachelor of Agricultural Art (B. A. A.) ; and those who have completed the Resident Graduate Course shall be entitled to the degree of Master of Agricultural Art (M. A. A).

Those who complete the course in Horticulture, shall be entitled to a Certificate or Diploma.

DESIGN OF THIS INDUSTRIAL COLLEGE.

It is the design of this school to give an education that will fit the pupil for intellectual and manual labor—to make him a man in body and mind, that he may enjoy the *mens sana in corpo sano*. Our graduates must be the peers of scholars in mental culture, and the equals of laborers in manual skill and physical development, that they may be prepared to honor labor and utilize and dignify learning.

To do this, one must have a thorough knowledge of his profession and be able to do its work with skill and care.

The first and highest employment of man is to cultivate the soil, to feed and clothe the world. To do this well, has been the ambition of the great and good of every land. The increase of populations and the multiplied demands for the products of the soil, must render this department of human industry more and more prominent, lucrative and honorable.

It is, therefore, eminently appropriate for this College, located in the midst of the best agricultural region of the continent, in which the populations of the earth are concentrating with unprecedented rapidity, to invite our youths to such a collegiate course of study and labor as will best fit them to develop the agricultural and mechanical resources of the State, and meet the coming demand upon their capacities. For such an education the pupil must learn two things :—

1st. What to do, and how it should be done.

2d. He must acquire the manual skill to do it, and do it well.

To know what and how, is the *Science*.

To have the manual skill, is the *Art*.

To get the *Science*, he must study.

To get the *Art*, he must work.

Our Industrial College, then, must be a school of *labor* as well as *study*. But how much study and how much labor are questions not definitely settled, but in general terms it may be stated.

The pupil must study until he knows what should be done, why it should, and how. When this is done, the Intellectual division of an Industrial Education is finished.

The pupil must labor until he can do all farm work with skill; and when this is accomplished the manual division of an Industrial Education is finished.

Whatever is more than this, has no more place in an Industrial School than in any other. It is not the idea of our school to furnish a place for pupils to work, but a place where they may learn to work as well as think.

But what shall the pupil do? Everything that is done on the farm, in the garden, orchard and nursery.

Who shall direct the labors of the pupils? He who says what is to be done, why it should be done, and how, is the one to see that it is done and well done. Then the teaching and practice will agree, science and art go hand in hand. This will prevent the introduction of many useless and impracticable theories. When one teaches merely, he can advance many beautiful theories for others to practice; but when he is expected to carry out his own suggestions, he will be more cautious, take more care that his instructions will bear the test of actual experiment.

As the ladies of Missouri have done so much to create a taste for the culture of fruits and flowers and ornamental grounds, it is but just the Commonwealth should provide a school where their daughters, as well as sons, may perfect themselves in these delightful pursuits. All necessary fixtures will be provided to make this department of the Industrial College most useful and instructive.

The ladies are, therefore, invited to partake of the benefits of this Horticultural course, where everything will be so managed as to awaken and cultivate the most refined and exalted tastes, and lead woman back to the pursuits she so much enjoyed in Eden.

LECTURES.

Three lectures will be given each day on the practical applications of science to agricultural pursuits.

The students of this College are by law admitted to the lectures and other exercises of all the departments of the University.

PROGRESS OF THE AGRICULTURAL COLLEGE.

The school opened in the last scholastic year with six pupils. The number gradually increased to twenty-nine during that year. During the present year the increase has been quite as satisfactory.

The pupils are young men, mostly from the farms of our own State, who maintain an unflagging interest in the studies and practical labors of our course.

The wide spread prejudices against a collegiate education for farmers are rapidly disappearing before the manifest beneficial results already developed; and this has been accomplished with but few of the fixtures and appliances enjoyed by similar schools in the neighboring States. When we have secured the same advantages, our College may be made far more attractive and useful.

A college, like a city, must be the growth of many years.

The farm needs houses, stables, fences, roads, bridges, and a supply of domestic animals. Hot and propagating houses, cold frames, pits, and other fixtures of horticulture are also needed.

Mechanic and machine shops are a prime necessity.

All these and other needed fixtures will be provided as rapidly as the endowment becomes available, and our necessities are appreciated.

SCHOOL OF MINES AND METALLURGY.

FACULTY.

DANIEL READ, LL.D.,

President and Professor of Civil Polity and Political Economy.

CHARLES P. WILLIAMS, A.M.,

Director and Professor of General and Analytical Chemistry and Metallurgy.

....*

Professor of Applied Mathematics and Engineering.

NELSON W. ALLEN, A.B.

Assistant Professor of Mathematics.

....*

Professor Geology and Natural History.

WILLIAM COOCH,

Assistant in Analytical Chemistry and Assaying.

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* At present filled by the other Instructors.

LIST OF STUDENTS.

FIRST YEAR STUDENTS.

Amsden, Otto B	Cuba.
Duncan, G. A	Arlington.
Gill, John Holt	York Station.
Godwin, Millard	Rutledge, Tenn.
Pack, John W	Rolla.
Richardson, George	Rolla.
Taylor, Edward C	Rolla.
Williams, H. A	Little Piney.

SPECIAL STUDENTS.

Dentlinger, J. J., (Blow-pipe Analysis)	Rolla.
Smith, B., (Assaying)	Boulder.
Wertman, J. S., (Blow-pipe Analysis)	Rolla.

PREPARATORY STUDENTS.

Boyd, James F	Oregon.
Deegan, Francis J	Rolla.
Gerrish, David A	Rolla.
Hall, Parkhurst E	Rolla.
Hoskinson, G. M	Rolla.
Love, George L	Rolla.
Minger, William	Rolla.
Norman, John S. F	Oregon.
O'Brien, John	Rolla.
Schleer, Peter	Rolla.
Scott, Homer E	Rolla.
Stiff, Abram L	Faxton, Va.
Tipton, Isaac N	Rolla.
Toomey, Joseph	Rolla.
Webber, Columbus	Rolla.
Wilson, Fred	Rolla.
Wilson, Jackson	Oregon.

COURSE OF STUDY.

PREPARATORY YEAR.

Algebra—to Quadratic Equations.
Arithemetic—Metrical System.
Rhetoric and Composition.
Natural History—Botany (Structural and Systematic).
Elementary Chemistry—Elementary Physics.
Physical and Industrial Geography—Lectures.

Students are required to have at least eighteen recitations weekly in addition to lectures, and bi-weekly exercises in Declamation.

FIRST YEAR.

Algebra—finished; Geometry; Trigonometry—begun.
Mensuration; Surveying and Field-practice.
General Chemistry and Chemical Philosophy; Physics.
Mineralogy—Descriptive and Determinative; Crystallography.
Outlines of Zoology.
Analytical Chemistry; Blowpipe and Humid Qualitative Analysis.
Drawing—Mechanical and Free-hand.

SECOND YEAR.

Trigonometry—finished; Analytical Geometry; Calculus—begun.
Surveying—Field-practice; Descriptive Geometry—Projections, Shades and Shadows.
Machinery and Motors.
Chemistry—General and Industrial; Metallurgy; Physics.
Analytical Chemistry—Qualitative and Quantitative Humid Analysis.
Geology—Physiographical, Dynamical and Historical Lithology; Phenomena of veins and mineral deposits.
Drawing—Free-hand and Mechanical.

THIRD YEAR.

Calculus; Analytical Mechanics; Applied Mechanics.
Field-practice and Engineering; Topography.
Metallurgy and Assaying—wet and dry methods.
Analytical Chemistry—Quantitative Analysis.
Machinery and Motors.
Mining—methods of exploration and exploitation; extraction; crushing and concentration; mining regions.
Drawing—maps, plans and sections of mines.

Towards the close of the third year, a course of lectures will be delivered by the President of the University, on mining law.

Throughout the course, evening public lectures on Human Physiology and Domestic Hygiene, and on special scientific studies, will be delivered. French and German are optional studies.

In accordance with the requirements of the "Agricultural Land Grant Act," provisions will be made for instruction in Military Tactics, &c.

REQUISITES FOR ADMISSION.

For the Preparatory Department, Applicants must be at least sixteen years of age, and must stand an examination in the ordinary branches of an English education. For admission to the First Year studies, Students must be at least seventeen years of age, and must stand an examination in all the regular studies of the Preparatory Year.

Special Students in any department are admitted without previous examination, but are not entitled to any degree conferred by the school.

Certificates of proficiency are, however, issued to such on satisfactory evidence.

The Degree of Mining Engineer (E. M.) is conferred on Students who pursue the full three years' course, and pass a satisfactory examination in their studies.

EXPENSES, ETC.

Tuition forty dollars per year, payable half-yearly in advance. Additional charges are made for glass-ware and apparatus broken in the chemical laboratories, for drawing materials consumed, and for the privileges of Students' reading room. Students furnish their own blow-pipe, platinum wire, foil, crucibles, etc.

Board ranges in price from $2.25 to $4.00 per week.

The city of Rolla is distant from St. Louis 113 miles southwest, on the line of the Atlantic and Pacific Railroad. The locality has railroad and telegraph facilities, and is pre-eminently healthy. It is in the midst of an extensive and rapidly developing iron district, with sections abounding in copper, lead and zinc deposits, within easy access.

LAW COLLEGE.

FACULTY.

DANIEL READ, LL.D., President.
JOHN H. OVERALL, LL.B.
Hon. BOYLE GORDON, A.M.

A course of instruction in this department will be commenced on the first Monday of October, and end with the last week of March. It will embrace the various branches of the Common Law and of Equity, Admiralty, Commercial, International and Constitutional Law, and the Jurisprudence of the United States.

The full course for graduation is designed to embrace two years. Two classes, a junior and senior, will be formed. No examination and no particular course of previous study will be required for admission to the junior class; but the student, if not a graduate of some college, must be at least nineteen years of age; and, if unknown to the professors, must produce testimonials of good moral character. Young practitioners, and such others as pass a satisfactory examination on the studies of the junior year, will be permitted at once to join the senior class.

Students who complete the course and sustain the necessary examination, will be entitled to receive the degree of Bachelor of Law.

Instruction will be given by oral lectures and expositions, and by recitations and examinations in connection with them.

The Course of study is as fullows:

JUNIOR YEAR.

Blackstone's Commentaries.
Kent's Commentaries.
Parsons on Contracts.
Stephen on Pleading.
Creasy on the British Constitution.
Story on Constitution of United States.
Halleck and Kent on International Law.

SENIOR YEAR.

Washburn on Real Property.
Greenleaf on Evidence.
Story on Equity Jurisprudence.
Bishop on Criminal Law.
Chitty on Pleading.
Practice under Missouri Statutes.

Judge Arnold Krekel, of the U. S. District Court, will, during the session, deliver a course of lectures on the Organization and Jurisdiction of the Federal Courts.

Judge Treat, also of the U. S. District Court, will deliver a course of lectures on Admiralty and Maritime Law.

Dr. Norwood's lectures on Medical Jurisprudence will be open to all law students.

Other special lectures on particular titles of the law, will be delivered by some of the most distinguished jurists, lawyers and judges of this and adjoining States.

A Moot Court will be held each week, at which a cause previously assigned will be argued by four students, and an opinion delivered by the presiding professor.

Students will be required to prepare legal papers, to deliver written and oral opinions on subjects assigned to them, and to draft pleadings, both at common law and in equity.

An appropriation has been made by the Board of Curators, for the purchase of a library, which will be selected before the opening of the School in October.

The student in this department will be permitted to enjoy the instructions and lectures of other departments, if not interfering with his own, and also to have access to the libraries, reading-room and cabinets of the University. He must conform to such regulations and orders as shall be required for the government of the University.

While sedulously endeavoring to impart a knowledge of the law, both as a science and an art, it will be constantly inculcated that manly character and moral tone form the very basis of a successful professional career, and pre-eminently belong to the true lawyer, whose very business is the application of the principles of right to the practical concerns of men.

Law students will be required to observe the conduct and manners of high toned gentlemen, and the idle and profligate are not wanted, and will not be retained after their character and habits become known.

It must be understood that the end and design of the University is, to train up an able and virtuous body of men for all departments of service in the State.

There is certainly no good reason why the law student intending to attain distinction, or even respectable proficiency in his profession, should not devote to his professional studies the same amount of time and labor as other students to their respective studies. It must be understood that there is no short or easy course to a mastery of the law, either in its principles or practice.

Reading, recitation, oral discussion, written dissertations by the student, the preparation of legal papers, the practice of the moot court, the stimulus of association among those engaged in common studies, are not merely useful aids, but indispensable requisites to the law student of the present day.

It has been said with great truth, that the student in the law school, with the aid of the moot court and other appliances proper to such an institution, will in half the time be better prepared for his profession than it is possible for him to be in double the time without such aid. Solitary study is no better in the acquirement of legal science than of any other kind of knowledge. The presence and inspiration of fellow-students, no less than the instruction and guidance of the professor, are indispensable to rapid progress and superior excellence in a profession requiring in its attainment the utmost effort and stretch of the human mind.

The Curators have felt that in the progress and extension of the University of this great commonwealth, they cannot longer delay putting into operation the Law College; indeed, that the University would hardly be worthy the name and support of the State, if not affording instruction in the principles and philosophy by which the State itself exists, and in the system of laws and methods of polity by which its complex affairs are administered for the welfare and safety of the people.

They have had many calls in the matter, not only from their own graduates and former students, but from members of the profession and public men in all parts of the State. They now appeal to good and patriotic citizens to sustain them in this new design of University enlargement, and in rendering our State Institution of highest learning commensurate with the wants of our people.

EXPENSES.

It has been the object of the Board to keep the expenses of attendance at the lowest practicable point. Hence, the rate of tuition for professional instruction and advantages not surpassed in the country, is made but $40 for the session.

Boarding is had in clubs, at from $1 75 to $2 00, and in families, at from $3 00 to $5 00 per week.

PROVISION FOR YOUNG WOMEN.

Young women are received into the Normal, the Preparatory, or into any other of the University classes for which they may be found qualified, and have the special care and supervision of the professors or teachers whom they attend.

Several young ladies now recite in advanced classes in University courses.

There is yet no building specially designed for the Woman's College. This is a great and pressing need.

For the encouragement of female teachers in the Normal Department, they are charged, as an entrance fee for the year, but $10, and no other charge of tuition is made.

Board is had in the best private families, and under the best supervision, at but three to four dollars per week. The whole charges are at so reasonable a rate, that young women may have the full advantages of the University at a cost much less than at schools affording fewer advantages.

There will be a club formed, in which a limited number of young women can be accommodated at club rates, under the management of a student brother and sister, in a building belonging to the University, and at a considerable distance from all the other club houses.

THE ROLLINS AID FUND.

This fund, now amounting to over the sum of $28,000, is the result of a bequest of the late Dr. Anthony W. Rollins, father of the Hon. James S. Rollins, President of the Board of Curators. The fund is under the care of the county court of Boone county. By the terms of the will, the principal is to be increased each year by the addition thereto of one-fourth of the interest; the remaining portion is to be expended in aiding the education of young persons of either sex, from the county of Boone, possessing good talents and good moral characters, and needing such aid. Young men having in view the ministry of the gospel are to be preferred. The selection is to be made by the President of the University, after examination as to the attainments of candidates.

The whole interest of the fund is, the present year, over $1600, so that $1200 will be available in aiding the pupils to be selected. No less than fifteen students have received aid from this fund during the past year.

President Read proposes, in order to aid as large a number of pupils as possible, that not more than the sum of $100 per annum shall be appropriated to any one pupil. As pupils will be near home, many expenses will be saved, and, with proper frugality and some self-help, the students will be able to pay tuition and meet other expenses in the University.

Not less than twelve students will be selected for the coming college year, to receive aid upon this foundation.

ADMISSION.

In order to admission into the University, each student is required, by ordinance of the Curators, to present to the President a certificate from the Treasurer of the Board, that his bill for entrance and contingencies has been paid. This bill cannot exceed $15 for the term, and, when paid for the first term or semester, will be but $5 for the second.

When an applicant for admission into the University has been connected with any other institution, he should present satisfactory evidence to the Faculty of an honorable standing in the institution from which he comes.

It is highly important that students should be present at the opening of the session, since the loss of a few days at the beginning breaks the connection of their studies and occasions serious embarrassments. The applicant must be fourteen years old.

LITERARY SOCIETIES.

There are two Societies connected with the University, viz.: "The Athenæan" and "The Union Literary." These Societies have spacious and well furnished halls in the University edifice, and hold weekly meetings for improvement in debate, oratory and composition. There has also been formed a third society for a less advanced class of students.

These Societies are in a flourishing condition, and form a most important means of culture, especially in extempore speaking and debate.

An address is delivered before the two, united, during Commencement Week, and Diplomas are given to such members as belong to the graduating class.

The Society Orator of the last year was the Hon. B. W. Hanna, Attorney General of the State of Indiana. The Orator of this year is Bishop Marvin, of St. Louis.

UNIVERSITY PERIODICAL.

The two Literary Societies, by a joint committee of editors, have, during the past year, published a monthly periodical, designed not merely as a record of University affairs, but also to contain literary, educational and philosophical matters of interest. This paper has been creditably conducted, and will, with the experience of the last year, no doubt be greatly improved during the coming year.

SOCIETY OF THE ALUMNI.

The Society of Alumni is composed entirely of graduates of the University. It holds an annual meeting on the day before Commencement, and is addressed in the college chapel by an orator previously selected from its own body.

The objects of this Society are the promotion of education, especially in the halls of Alma Mater, the reunion of early friends and co-laborers in literary pursuits, and the revival of those pleasing associations which entwine themselves about academic life.

The Alumni Orator of the present year is Col. James R. Shields, of the class of '53. There will also be a reunion on the evening of Commencement day, with supper, speeches, toasts, etc., held in the new Library Hall and adjoining rooms.

PUBLIC EXHIBITIONS.

The exhibition of the Junior Class is held in the college chapel, on the last Friday in April.

The Literary Societies give public exhibitions on the last Friday of March and the first Friday of April—the societies alternating in precedence.

Prize Declamation occurs on the evening preceding Commencement.

During Commencement Week orations are delivered before the Literary Societies and the Society of Alumni, and on Graduation Day orations are delivered by members of the graduating class.

APPARATUS AND CABINETS.

The outfit of instruments and other facilities for illustrating the principles of Natural Philosophy, Chemistry, and the cognate branches, has been increased from year to year, and is now better than in most institutions.

The Cabinet has been greatly augmented from time to time by exchanges, and particularly by additions made by order of the General Assembly, through the State Geologist.

Yearly additions to the Cabinet of Minerals will continue to be made during the progress of the Geological Survey. Its size and value at present are increased by many valuable specimens belonging to Professors Swallow and Norwood.

The number of specimens in the Cabinet is about 500,000.

The appropriation the present year for apparatus amounts to several thousand dollars.

We must have ample apparatus for the means of illustration and experiment. We cannot do without it. The time was, in the elementary state of scientific investigation, when great results were obtained by a few broken bottles and glass retorts ; and doubtless, also, the simplest and least expensive apparatus in the hands of the ingenious professor will be more useful than the most expensive and elaborate in the hands of the inexpert and bungling; yet the scientific man in our day requires the constant aid of the best means, both in his instructions and original investigations. He must have them, just as the farmer must have improved implements and machinery.

OBSERVATORY.

The Observatory stands west of the University edifice. It is forty-four feet long, fourteen feet wide, fourteen feet high in the Equatorial room, and ten feet high in the Transit room.

The roof of the Equatorial room is a cone which revolves on eight lignum vitæ balls, and is confined to the building only by its gravity. The roofs of both rooms are intersected by shutters for the convenience of observation. The instruments stand on stone slabs, which rest on pillars that descend about six feet into the ground, and have no connection with the floors.

The Equatorial Room contains an Equatorial Telescope, by Fitz, of New York. The Transit Room contains a Sidereal Clock, a Transit Circle, an Altitude and Azimuth Instrument, and a Transit Theodolite. Besides the foregoing instruments, the outfit includes a Sextant, Mercurial Horizon, Barometers and Thermometers.

By means of these instruments, the student is enabled to gain an insight into the important *practical* work of modern astronomy.

LIBRARY AND LIBRARY HALL.

There has been recently fitted up a very elegant hall as a reading and library room. The University Library consists of some five thousand volumes. It is in a constant state of increase by gift and purchase.

The annual appropriation by the Board of Curators for the increase of the library is $1,200. Besides, the two literary societies have each some fifteen hundred volumes.

The Library is open every day three hours, from 3 o'clock P. M., for consultation.

A large purchase of books is to be made, both for the general library and for special departments, before the beginning of the next session.

READING ROOM.

A University reading room has been established, and means taken to procure newspapers, and the principal home and foreign periodicals.

The Reading Room Association occupies Library Hall, which is open each day at 3 P. M., as a reading room for the students and professors.

DISCIPLINE.

The Discipline of the University is intended to be mild and suasive, as far as circumstances permit. If, however, students manifest such moral obliquities, or such idleness as render them unworthy members of the body collegiate, they are returned to their friends without exposure, when it is practicable so to do; and it is only in cardinal offenses that the Faculty resort to PUBLIC and EXEMPLARY punishment.

When a student enters the University, the discipline of the Institution allows him a credit of one hundred merit marks; and he is charged on the record with such demerit marks as arise from misdemeanors and neglect of college duties. When it is ascertained that his demerits reach fifty, a letter of notification is sent to his parent or guardian, and when the number reaches one hundred, he is excluded from the Institution by the operation of law, which is rendered effective by an announcement of the fact by the President.

If a student shall have incurred twenty-five demerit marks, he cannot be selected by the Professor of Rhetoric as a prize declaimer.

LEAVE OF ABSENCE.

When a student wishes to leave the University, either temporarily or permanently, he should confer with the President, in order that charges for absence may not accumulate against him on the record of demerit. It is hoped that absences from the Institution for the purpose of visiting friends, etc., will be discouraged by parents and guardians, because such absences interrupt a student's progress, and greatly diminish the pleasure and profit of his literary pursuits.

In cases of withdrawal, written authority from the parent or guardian will be required; and, as a general rule, like authority will be required even to obtain a leave of absence. Parents and guardians are again urged not to encourage withdrawals; nor to permit them, save from controlling reasons.

RULES.

These are few, and designed to promote the good order and welfare of the University community, and the best interests of the individual students.

IT IS REQUIRED OF STUDENTS:

1. Immediately upon arrival to pay entrance and contingent fee, and bring receipt of Treasurer to the President in order to be enrolled as matriculates, and examined for admission to proper classes. In case of continued delinquency to enroll and loitering about the town, the person so delinquent will not be received as a member of the University. No one can be enrolled until he shall have presented the receipt of the Treasurer, as above specified. No student can enter a class with any Professor until he shall have been admitted to the University and enrolled by the President.

2. To have three recitations, unless for good reasons excused; and to take such part as may be assigned in all general exercises of the University.

3. To be present at daily prayers in the University Chapel; at all recitations and other exercises as may be assigned, and to make due preparation therefor.

Absolute promptness and punctuality are required.

4. Faithfully to observe "*study*" hours, and not to be found loitering in the streets, in shops, or at places of amusement during these hours, or after dark, or at late hours.

5. It is expected and enjoined that students, on Sunday, attend the church of their choice, or that of their parents, and to observe the day as good and orderly citizens of a Christian community.

6. In general terms, it is required of students to be quiet, orderly and industrious; to observe the rules of the recitation room by abstaining from whispering or other communication, from spitting on the floor, from all unseemly postures, and at all times to observe the conduct and deportment of well-bred gentlemen.

7. It must be distinctly understood that the University is for the good and virtuous young men of the State, and not for the idle and disorderly, the vile or vicious.

THINGS FORBIDDEN TO STUDENTS.

1. To enter a billiard or drinking saloon, upon any pretext whatever; to carry concealed weapons, or to use profane or indecent language, or to indulge in intoxicating drinks of any kind.

2. Noisy and disorderly conduct about the University buildings, assembling about the doors, whistling, sitting in the windows, shouting or calling aloud from the windows, or assembling in halls before or after recitation or other exercise.

3. To smoke in the buildings or on the campus.

4. In any way to mar or injure the University buildings or furniture, by whittling, cutting, marking, or in any way defacing the same. All University property is to be guarded and preserved as a sacred trust, and to be used without abuse.

5. To leave town, or to change a recitation which has been assigned, without the permission of the President. Leave must be obtained beforehand.

6. No student will receive an honorable dismission who is under a charge, or who has failed to pay all University dues, or who has not returned all library books.

7. All those things are forbidden which tend to deteriorate moral character, to prevent intellectual and moral advancement—in short, all those wicked and immoral practices and habits which would be forbidden in good and cultivated families, and which tend to prevent preparation and training for good citizenship.

☞ *The attention of students is especially called to the foregoing rules, and they will not be permitted to plead ignorance of them when called to account for delinquency.*

SESSIONS, VACATIONS, AND TERMS.

The Annual Session begins on the third Monday of September, and continues forty weeks.

Commencement occurs the last Wednesday in June.

The annual vacation is from Commencement till the third Monday of September—the 16th of September in 1872.

A recess of two weeks is taken during the holidays.

The Annual Session is divided into two terms or semesters —the first ending on the 10th of February—the second, continuing until Commencement day.

COUNTY COURT APPOINTMENTS ABOLISHED.

The County Court system, by which the Courts were entitled to appoint students equal to the number of Representatives from the county, to be free from tuition fees, was abolished by the last Legislature.

FEES AND EXPENSES.

Annual entrance fee, $10. Library and incidental fee per term, $5—that is, the student who enters the first term pays $15, and for the second semester only $5, having paid his entrance fee for the year upon admission. If he enters the second term, he pays both his entrance and incidental fees. These charges are so low as properly to be considered merely nominal.

This rule applies to all students resident of the State. Non-resident students are charged per term, $20

Law students are charged for the session, $40. This includes all incidentals.

There will be a charge to the professional student of Analytical Chemistry, which has not yet been established by the Board of Curators ; but it may be assumed that it will be less than in any similar institution affording equal advantages.

Board in private families, with lodging, washing and fuel, may be obtained from three to five dollars per week.

By entering clubs, this amount may be reduced to one dollar and fifty cents, or two dollars.

The allowance for clothing, books, and pocket money, will vary with the character of the student. It is hoped that parents will bear in mind that too liberal an allowance of money exposes a youth to temptation, interferes with his habits of study, and adds nothing to his happiness or respectability.

Young men working on the College Farm, or in the gardens, will be allowed from ten to fifteen cents per hour, according to their skill, fidelity and industry, to be determined by the Garden or Farm Superintendent.

BOARDING OF STUDENTS.

There are three methods by which students provide boarding.

1st. There is the boarding and rooming of students in a group of cottages, with a dining hall, situated near the University campus, but not on it. These cottages are cheaply built wooden structures, and afford accommodation for about fifty students. The students who board themselves in the cottages form themselves into a club, appoint their own commissary and other officers, establish and keep up their own police, punish members by fine or expulsion, and on each Saturday meet to hear reports and consider the welfare of the club, and generally to attend to its business affairs. The weekly expense of board, including a small admission fee to keep up the furniture, also rent payable to the University, does not exceed $1.75 per week.

Each student furnishes his own room, which may be done at cheap rates. If convenient, he may bring his furniture, at least in part, from home. All can bring bed-clothing, and had better do so.

The present is the fourth year of experience upon this plan. The club, by its proper officials, has hired its own cook, regulated the bill of fare, bought provisions, and maintained the order of the establishment.

The plan has been a complete success, is popular among the students, and has attracted much attention throughout the State. It is a full solution of the question—how may boarding be secured at the lowest rate, and in a manner most satisfactory to the student?

Very young students, or those incapable of taking care of themselves, ought not to enter the boarding club. While the

President and Professors frequently visit the rooms of the club, the police duty devolves mainly upon the young men themselves, and is more effectively carried out than it could be by the Faculty. Their rules are strict, and students of known shiftless ways or noisy habits are not admitted ; or, if admitted, are soon cut off. Good behavior and quiet habits are indispensable, and none other than those possessing these characteristics can enter or continue members of the club.

It ought to be remarked that the health of the members of the club has been above the average of the students of the University, while their order and good conduct has been equal to that of those boarding in families.

2d. We have also the boarding and rooming of our students at the Hudson House, a fine mansion, having two adjoining cottages, with beautiful lawns, about half a mile distant from the University. This beautiful property, and so important to our general plan, fell to the ownership of the University with the College Farm.

Students, are boarded at this house upon the club system, conducted much in the same manner as those who board in the cottage clubs, except that they make their living more expensive by about twenty-five cents a week.

3d. Students find boarding and rooms in private families at rates such as shall be agreed on, generally as above stated, at from $3 to $5 per week.

In many cases, it is best that boarding should be obtained in good private families.

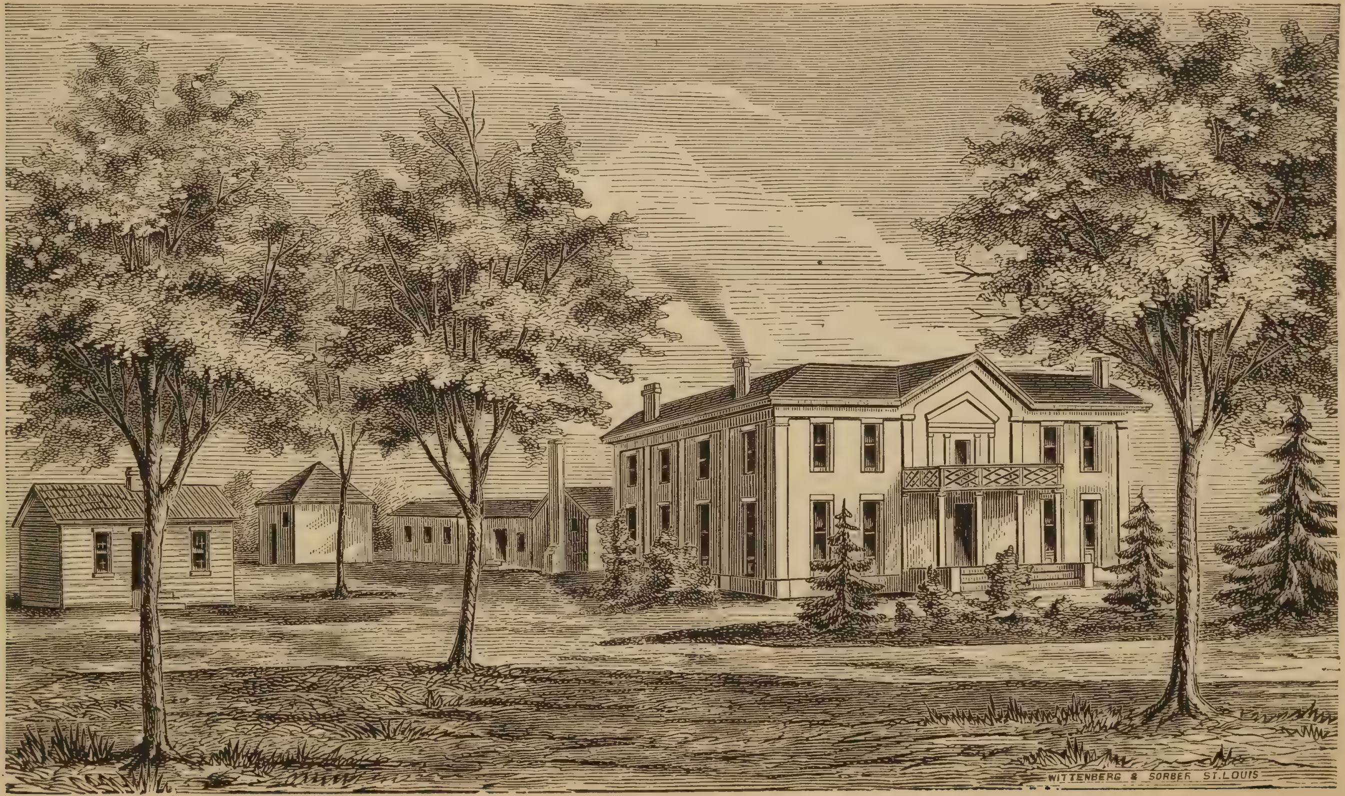
RENTING ROOMS.

Students in order to rent rooms in the cottages, or the Hudson House, or any other building belonging to the University, must apply to Dr. Hubbard, the Business Agent, and receive them upon the following conditions, viz :

1st. To keep the rooms in a proper and cleanly manner ; in no way to injure or deface them, and to open them to the proper officer for inspection.

2d. To avoid boisterous and improper conduct.

3d. To observe the rules of the House or club, and to be subject to be removed for non-payment of assessments, fines or charges.



HUDSON MANSION.

4th. No student occupying a University room can exchange it with another student, or under-rent it, except by the permission of the Business Agent.

5th. Rent is to be paid in advance, and before entering the room.

The Business Agent shall in all cases be the judge of the violation of these rules, and have full power to remove a student therefor; and in case of such removal, there shall be no repayment of rent.

EXAMINATIONS, HONORS AND DEGREES.

There are four examinations in the University:

1. An examination of the new students is held at the beginning of the session, for the purpose of ascertaining their scholarship, and assigning them to the classes for which they may be qualified.

On the occasion of these examinations, the Faculty generally recommend the full course of study to students whose age and means render such a course advisable.

2. An intermediate examination of all the classes, partly oral and partly in writing, is held about the middle of February.

3. An examination of the Senior Class is held, a short time before commencement, in order to determine what members are qualified for graduation.

4. A general examination of all the other classes is held during the week preceding commencement, for the purpose of ascertaining the progress of the students, and deciding what students shall be promoted to higher classes.

Each candidate for graduation is required to prepare a Thesis—Oration or Essay—which may be delivered or not, at the discretion of the Faculty. The usual College honors, appropriate to each of the first Academic degrees, are awarded by the Faculty among the graduates.

The regular Academic degrees are Bachelor of Arts, Bachelor of Philosophy, Bachelor of Letters and Bachelor of Science, according to the particular course of study which the student pursues. Each of these courses occupies four years, and is intended to be of equal honor.

The degree of Master is also conferred, three years or more after graduation, upon such Bachelors as pursue a professional or literary career.

The Curators can, of course, in addition to these, confer any of the usual honorary degrees and titles.

REPORT OF COMMITTEE ON UNIVERSITY DEGREES.

The following is the report of the Committee of Reorganization, the recommendations of which were adopted by the Board of Curators, and to which the action of the University will be conformed in the awarding of its degrees and certificates of proficiency in the various branches of learning, as specified in the appointed courses. The report says:

"The question of what shall be the degrees is one worthy of consideration.

First. Shall there be any honorary degrees? They have been abused until they are almost worthless as honors. When General Jackson received a doctorate from Harvard, it conferred no great honor either upon the recipient or the giver. Or, when the Duke of Wellington was made Chancellor of Oxford—an honorary office—and pronounced his Latin oration in very bad quantity (even after drilling), it can not be said that the university either gave or received any extraordinary honor. But learning has in all ages, from the days of Augustus, paid its court to power. It has sometimes done itself honor by paying honor to the worthy. The object of these degrees is to honor merit, to incite to nobler effort, and to give academic recognition to great literary, scientific, or civic excellence.

Your Committee are not prepared to recommend the total discontinuance of honorary degrees by a rule, as is the case in the Virginia University; but certainly that our University should be exceedingly sparing in conferring them.

The regular academic degrees in course should be as follows: Bachelor of Arts, Bachelor of Philosophy, Bachelor of

Science, and also Bachelor of Letters (*in literis humanioribus*), for great excellence in classical and literary studies.

These degrees to be conferred after the proper trials and examinations.

Certificates of proficiency for those proficients who have completed the course in any branch and sustained their examinations. Such certificates to be formally and publicly awarded.

Students who have pursued elective courses equivalent, in the judgment of the Faculty, to one of the specified courses, may receive the degree judged most appropriate.

The degree of Master of Arts, Master of Science, Master of Philosophy, and Master of Letters, will be conferred, on the recommendation of the Faculty, after the expiration of three years from the time of graduation, upon those deemed worthy.

SPECIAL OR PROFESSIONAL DEGREES.

These will be, Bachelor of Law, Bachelor of Agriculture (B. Ag.), Bachelor of Engineering, of Mining, etc.

There will be also the degree of Normal Graduate, and a certificate of proficiency in the Art of Teaching, and also a degree of a higher grade to teachers.

These degrees to be conferred by the Board of Curators, after recommendation of the candidates by the Professional Faculty to the General Faculty of the University, and thus presented to the Board.

POST-GRADUATE COURSE AND DEGREES.

There is great difficulty in providing a system which shall meet the wants of all students of every grade. This must be done as far as possible, and, in fact, herein is the idea of the true University. As the means and appliances of the University shall be enlarged in all directions, and the Professors become numerous, it will become the residence of students who wish to continue their studies after graduation. Even now there are some such, and the number will increase from year to year.

The course which students of this class will pursue, will be for the most part according to their own individual wishes. The Faculty, when fully organized, should provide aid, by lectures, recitations, and courses of reading, to assist such students in the pursuit of their studies and investigations.

Your Committee recommend that the following degrees be conferred upon students who become resident graduates, and students upon post-graduate courses, under the direction of the Faculty:

Students who remain one year after graduation in Arts, Philosophy, Science, or Letters, shall, on recommendation of the Faculty, be entitled to the degree of Master.

Students who remain a still longer period, as shall be appointed by ordinance, may be admitted to the degree of Doctor.

All degrees must be conferred upon recommendation of the University Faculty.

Bad character, or University delinquency of any kind, shall be good reason for exclusion from a degree.

PRIZES—

The Stephens' Prize, founded by J. L. Stephens, Esq., of Columbia, is given each year, in the form of a Gold Medal of the value of $50, to the member of the graduating class adjudged to be the finest Orator on Graduation day.

SOCIETY PRIZES—

Established by the two Literary Societies—To the six best speakers from sixteen competitors selected from the body of the students below the Senior Class, who shall appear at a public exhibition on the evening preceding Commencement; but no student can be selected who has received twenty-five demerit marks.

PRESIDENT'S DEPARTMENT.

One, the Field Prize, in honor of the late distinguished jurist, Judge R. M. Field, by his heirs, to the student who shall sustain the best examination on "British and United States Constitutional Law;" also, on "International Law and the Philosophy of Government." The examination to be both written and oral.

To the second best in this examination, the department prize will be awarded.

PRIZES IN THE AGRICULTURAL COLLEGE.

There are two permanent prizes connected with this department.

The *Harris Medal* to the Senior Class for the "*Best Essay on Dairy Stock.*"

The *Swallow Prize* for the "*Best Oral Examination on Pruning,*" to the Freshman Class.

Mr. George F. Barr, of the Graduating Class, gives a prize to the Freshman Class for the "*Best Essay on Grape Culture in Missouri.*"

Prizes in Department of English Literature, by Eugene Field:

1. Fine copy of Shakspeare.
2. Copy of Byron.
3. Chambers' English Literature.

PRIZES IN NATURAL PHILOSOPHY.

Mr. Charles Dachsel, of Cedar City, Missouri, offers to the Junior Classes of 1873 and 1874, a prize of TWENTY DOLLARS, to be awarded to the student of each class who sustains the best examination in PHYSICS, and presents, at the same time, the best *Original Essay on the Steam Engine.* The awards to be made by a select committee during Commencement week.

PRIZE IN ANATOMY AND PHYSIOLOGY.

Dr. J. G. Norwood offers to the Graduating Class of 1873, a prize of TEN DOLLARS, to be given to the student who presents the best THESIS on some physiological subject, to be designated by the Professor of those branches. The award to be made by a select committee of graduates in medicine. Those who contest for the prize must hand their Thesis to the Professor at least one week prior to Commencement day.

SENIOR PRIZE.

Prizes (first and second) of Senior Class to Juniors, for excellency in oratory at the Junior Exhibition, matter and style of composition, as well as delivery, being taken into consideration.

SITE.

The University is situated near the center of the State, at Columbia, in a beautiful and picturesque limestone region, on the elevated rolling table land lying back from the north side of the Missouri river; and were the selection of the site to be made anew, perhaps no spot in the State could be found combining more desirable elements, as the seat of the State University. The town contains three thousand inhabitants: and in its healthfulness and scenery, and especially those social, moral and religious influences which tend to preserve the character of young men, and promote among them gentlemanly conduct, good order and studious habits, can hardly anywhere be surpassed.

SPHERE AND OBJECT OF THE UNIVERSITY.

The State of Missouri, in devising a scheme of public education, provides in the Constitution as follows:

"SEC. 1. A general diffusion of knowledge and intelligence being essential to the preservation of the rights and liberties of the people, the General Assembly shall establish and maintain free schools for the gratuitous instruction of all persons in this State between the ages of five and twenty-one years."

"SEC. 4 The General Assembly shall also establish and maintain a State University, with departments of instruction in teaching, agriculture, and in natural science, as soon as the public school fund will permit."

Thus it will be seen, the State has made free schools and a University part of the same system; and the object is declared, in the preamble of the provision on the subject, to be "a general diffusion of knowledge and intelligence," and this as "essential to the preservation of the rights and liberties of the people." The end to be secured is the highest possible one that can be held up before a free people.

The University of the State of Missouri was chartered by the Legislature durring the session of 1838–39, and went into full operation on the 4th of July, 1843. The annual income of the proceeds of "the seminary lands," that is, of lands granted to the State by Congress for the perpetual support of a seminary of learning, was set aside for the support of the University.

Under a succession of able and learned Presidents and Professors, the University, though having but small means, was eminently useful. The number of graduates were over

200, besides a much greater number educated in the University, but who, on account of deficiency in some part of the full course, have not been admitted to graduation.

The new Constitution, in accordance with the spirit of progress, requires the University to be established and maintained with other departments, viz : of instruction in teaching, in agriculture, and in natural science.

The Constitution manifestly contemplates and intends a University to include various departments or colleges, four of which, in addition to the department already existing, are specified.

The Board of Curators, four years ago, established a College of Normal Instruction, which has been since in successful operation, and at the coming Commencement will graduate its third class.

The grant of land to the State for the establishment of a College of Agriculture and the Mechanic Arts, constitutes in the hands of the Legislature a "public school fund," which will enable that body to fulfil the noble provisions of the Constitution, by the speedy establishment of the Agricultural College, with schools of Engineering, Mining and Metallurgy, and Analytic Chemistry, which, with the departments already established, and others which from time to time shall be established, will constitute a great University, almost in the very heart of the State, to which the sons of Missouri may resort for the instruction they may need, in all branches of human knowledge.

These lands, by the act of the Legislature, approved February 24, 1870, were turned over to the University, for the support of a College of Agriculture and Mechanic Arts connected therewith, and twenty-five per cent. thereof for the support of the Mining School located at Rolla, in Phelps county.

UNIVERSITY HONORS.

HONORS TO GRADUATING CLASS—1871.

Valedictory.—John E. Johnston, Antrim, Ohio.
Scientific.—J. L. Ladd, Mexico.
Philosophic.—Clark Craycroft, Otterville.
Mathematical.—Allen Glenn, Harrisonville.

STEPHENS' PRIZE. (GOLD MEDAL—$50.)

Founded by T. L. Stephens, Columbia.

John E. Johnston.

SOCIETY PRIZE.

To the best six speakers from sixteen competitors selected from students, except Senior Class. Prize established by the two Literary Societies:

1st prize, Henry W. Ewing, St. Louis.
2d " Eugene Field, St. Louis.
3d " Scott Hayes, Springfield.
4th prize, N. W. Allen, Allenton.
5th " H. Chomeau, Florrisant.
6th " Turner McBain, Columbia.

DEPARTMENT PRIZE IN GREEK.

First prize for scholarship in Plato's Gorgias, N. W. Allen, Allenton.

Second, Best written analysis of Gorgias, James W. Horner, Columbia.

Junior Latin.—For best written translation of a selection of the Odes of Horace, George F. Davis, Columbia.

Freshman Greek.—First prize — For highest scholarship in Homer's Iliad, Miss Julia F. Ripley, Columbia.

Second prize, for best written translation of the Sixth Book of Iliad, Joseph T. Ridgway, Brookfield, Mo.

DEPARTMENT PRIZE—LAW.

John E. Johnston.

DEPARTMENT PRIZE—AGRICULTURE.

Prize for best essay on Grape Culture in Missouri, S. C. Rogers, Lathrop.

Prize for best oral examination in Pruning, Wm. F. Williamson, Grants Hill.

First prize to Juniors for best oration at Junior exhibition, 1872, by Seniors, Robert Fagan, Milwaukee, Wisconsin.

Second prize, by Sophomore and Freshman classes, Scott Hayes, Springfield.

HONORS OF GRADUATING CLASS—1872.

First—Valedictory, Thomas A. Johnston, Boonville.
Second—Scientific, James N. Baskett, Mexico.
Third—Philosophic, Miss S. Anna Ware, Spring Hill.
Salutatory (Latin), N. W. Allen, Allenton.

GRADUATING CLASS—1872.

Nelson W. Allen, Allenton,
Geo. F. Barr, Quincy, Ills.
J. N. Baskett, Mexico,
G. F. Davis, Columbia,
Henry W. Ewing, St. Louis,
A. M. Ellington, Louisiana,
J. W. Horner, Columbia,
T. A. Johnston, Boonville,
G. Bingham Rollins, Columbia,
Miss S. A. Ware, Chillicothe.

NORMAL GRADUATES.

A. T. Harrison, Richmond, Va.,
Wm. H. B. Trantham, Springfield,
Sam'l T. Swinford, Independence,
Miss Sue Calison, Jonesport,
" Helen A. Packer, Columbia,
" Gertie C. Seward, Laclede.

MASTER'S DEGREE IN COURSE—1871.

T. A. Arnold, M.D., St. Louis,
Richard Gentry, Columbia,
M. H. Givens, Arrow Rock,
W. A. Leintz, Columbia,
W. H. Turner, Chillicothe.

HONORARY DEGREES—1871.

A. J. Conant, Esq., A.M., St. Louis,
Richard Shannon, A.M., St. Joseph,
Hon. John W. Harris, Master of Agriculture, Rocheport.

PROGRAMME

OF

30TH ANNUAL COMMENCEMENT, 1872.

Senior Examination commences June 10th. Other Examinations daily from Monday, 17th of June, to Saturday, 22d.

FRIDAY, JUNE 21ST:

8 P. M. Shakspearian Readings and award of Field Prizes.

SUNDAY, JUNE 23D:

4 P. M. Baccalaureate Discourse in the Chapel, by Rev. R. A. Holland, of St. George's Church, St. Louis.

MONDAY, JUNE 24TH:

8 P. M. Address before Athenæan and Union Literary Societies by Bishop Marvin, of St. Louis.

TUESDAY, JUNE 25TH:

9 A. M. Meeting of the Board of Curators and Board of Visitors.

10 A. M. Meeting of Alumni and Address by Col. Jas. R. Shields of class of 1853.

8 P. M. Prize Declamations.

WEDNESDAY, JUNE 26TH:

9 A. M. Commencement Exercises. Conferring of Degrees and Public Award of Prizes.

3 P. M. Class-Day Exercises.

8 P. M. Alumni Re-union—Supper—Speeches—Toasts—in the Library Hall and adjoining Rooms.

CALENDAR.

1872-73.

1872.	
September 16, Monday	Session opens.
October 7, Monday	Law Session opens.
December 23, Monday	Closes for Holiday Recess.
1873.	
January 4, Saturday	Re-opens.
January 13, Monday	Subjects for Junior Exhibition and Commencement presented.
February 3, Monday to February 7, Friday	Semi-annual Examination.
February 10, Monday	Second Semester begins.
March 17, Monday	Orations for Junior Exhibition presented.
March 21, Friday	Annual Exhibition of Union Literary Soc'ty.
March 28, Friday	Law Session closes.
April 4, Friday	Annual Exhibition of Athenæan Society.
April 21, Monday	Graduation Orations presented.
April 25, Friday	Junior Exhibition.
May 5, Monday	Honors announced.
May 9, Friday	Prize Declaimers appointed.
June 16, Monday to June 20, Friday	Annual Examinations.
June 22, Sunday	Baccalaureate Discourse.
June 23, Monday	Address before Societies.
June 24, Tuesday, A. M	Meeting Board of Curators, Alumni Meeting.
June 24, Tuesday, P. M	Prize Declamations.
June 25, Wednesday	Commencement.

DIRECTIONS FOR NEW STUDENTS.

1. Reach Columbia, if possible, on the Friday preceding the opening of the session.

2. If assistance is desired in obtaining board, report to the President or other member of the Faculty, at the University building.

3. Before entering the University, entrance and incidental fee must be paid to Mr. J. H. Waugh, Treasurer, at the National Exchange Bank, and his certificate obtained.

The Treasurer's certificate should be at once presented to the President, at the University, when the name of the student will be entered upon the roll, and assignment made for study.

5. Young men coming to Columbia, intending to enter the University, are cautioned against delaying their entrance without good reason, as such delay not only injures the work of the entire session, but leads to unfortunate inferences concerning the character and intentions of the student.

APPENDIX.

[A.]

Extract from the Speech of the Hon. JAMES S. ROLLINS, delivered in the Senate of Missouri, March 19, 1872, on the Bill making Appropriations for the Benefit of the State University, and its Scientific and Industrial departments, including the School of Mines.

[*The speech itself, published as a "Plea for Farmers, Mechanics and Miners," presents both the arguments for and plan* of a State University upon a broad and liberal scale, such as Missouri needs. It bears as its motto the noble utterance of Daniel Webster:

"*There is no duty so solemn, no responsibility so fearful, as that resting on the statesmen of this republic, of making broad and universal the diffusion of education amongst the masses of the people.*"]

NOT A LOCAL OR PARTIAL MEASURE.

I trust the Senate will at least do me the justice to believe, that in what I shall say, I am not bound down by narrow, or partial, or local considerations. No, sir; no, sir. I rise above all such. I say, with solemn emphasis, that in my advocacy of measures "to maintain" the University and make it worthy of the State, and especially in advocating this bill, the very object of which is to benefit the industrial and practical departments of the institution, and to give it the necessary means of imparting that experimental science which, in the enlarged domain of human knowledge, has become so important—I had almost said essential—to the agriculturist, the mechanic, the miner, the engineer, the architect and the practical chemist, that I am looking, in the broadest manner, to the honor, to the interests, to the respectability, at home and abroad, of this our great State of Missouri—this grand commonwealth, possessing such capabilities of wealth and power as I verily believe belong to no other State in this our wide-spread Union. Yes, sir, I am speaking for the whole State, and especially for the elevation and welfare of its industrial interests; and I feel that with my convictions, were I now to withhold my voice or my efforts, humble as they may be, I should be an unworthy and unfaithful representative of the people of Missouri.

THE PEOPLE THE STATE, AND NOT ITS MATERIAL RESOURCES, HOWEVER GRAND.

We are ever to remember, Mr. President, that our possibilities and capabilities, as a State, do not lie merely in our rivers, though affording more miles of navigation than those of any other State, nor in our magnificent central position, nor in our soil, though richer than that washed by the Nile itself, nor in our mountains of iron, or our fields of coal, or mines of lead, or quarries of marble, or in any other natural advantage, however great and wonderful. They do consist, sir, far more in the people we are to have, in our children and youth; those who, in fact, are soon to make up and constitute the State itself (for let it be forever remembered that the people are the State, and nothing else is); those who are to use and possess all its vast and untold resources and means of enjoyment, who are to develop its civilization, and to create for it the name and glory it is to have as a commonwealth.

> "What constitutes a State?
> Not high raised battlements or labored mound;
> Thick wall or moated gate;
> Not cities proud, with spires and turrets crowned;
> Not bays and broad armed ports,
> Where, laughing at the storm, rich navies ride;
> Nor starred and spangled courts,
> Where low-browed baseness wafts perfume to pride.
> No! men, high-minded men,
> Men who their duties know,
> But know their rights, and knowing, dare maintain:
> These constitute a State!"

POWER OF EDUCATION.

In a word, it is our system of education, embracing both the elementary and the higher, which is to make us a great and intelligent people; which is to awaken our own self-respect, and command the respect of the world at large; which is to put it in our power to subsidize the forces of nature, and make them the servants and workmen in behalf of our common civilization.

WHAT SCIENCE IN ITS APPLICATIONS HAS DONE AND IS TO DO.

It is by no means my purpose to dwell upon what science has done for our age and generation; hardly, indeed, to touch upon this grand and fruitful topic. We see its achievements everywhere, and in all departments of life, in the very greatest, and in the humblest and most minute. It has accomplished and made realities what you, sir, and I would, but a few years ago, have regarded as the wildest dreams of the imagination, if not, in the nature of things, utter impossibilities. I stand amazed at its results whenever I think of them. Steam, and lightning, and air, and all the agencies of nature as now subdued to the dominion of man by the simplest principles of science, have changed our whole earthly condition. It is practical science—science applied to the arts of life—which has enabled men to understand and use the power and agencies of nature which exist everywhere around us. But the same science is to do yet more. She has but begun her triumphs. Think of all the wonderful discoveries of the past few decades. Far more will they be in the few years to come, for one discovery makes way for another, one step prepares for the succeeding one. I sometimes almost wish with Franklin, the great American philosopher, that I could lie torpid for a hundred years, and then walk forth upon the earth and see what improvements had been made among men. But, sir, I must not proceed in this line of thought, nor dwell upon the blessings which science is opening to our race.

Allow me here to say, that I am now pleading before this honorable body, not for classical studies or the elegances and refinements of literature, however valuable and delightful these may be. I am pleading for science as applied to all the varied arts of life. In this I am pleading for the farmer, the mechanic, the miner, the worker in all the industries where science is needed—and can any man tell me where it is not needed, whether in the pursuits of war, or of peace, whether in navigation, or manufactures, or agriculture, or mining, or even in the kitchen itself?

THE GRAND EXAMPLE OF PRUSSIA—HER LESSON TO THE WORLD.

We have been amazed at the progress of one nation, which above every other of ancient or modern times has made education the very fundamental principle of her government. The whole state-craft of Prussia is comprised in the simple word education—education—education—first, second, last—the very highest scientific education, and the very best elementary education. She has given us the great lesson of the age—she has pointed out the true method of national development and greatness. By this simple ruling idea, she has risen from the rank of a third or fourth rate power to be the great central power of Europe, and she has risen to this rank with unparalleled rapidity. There is not a department of industrial life for which this wonderful people have not their schools—their agricultural schools, their normal schools, their mining schools, their polytechnic schools. I can hardly enumerate them.

THE NECESSITY OF PRACTICAL SCIENTIFIC INSTITUTIONS IN MISSOURI.

Mr. President, we must have in this, our commonwealth of Missouri—yes, I say *must*—we *must* have *our* scientific industrial institutions. The necessities of the State, the progress of opinion throughout the country, absolutely demand institutions such as we are laboring to build up in connection with our State University. The constitution, the laws, the true policy of the State demand them. Shall untold riches, such as no dream of oriental imagination ever pictured, lie all around us, on the earth and under the earth, and shall we, as a State, make no provision for their use or distribution? We cannot afford it—we cannot as an economic measure, looking simply at the development of wealth, afford it. With our varied ores and minerals, worth a thousand times all the sparkling diamond fields of South Africa, we need practical knowledge to bring them up from the earth and reduce them to the uses of man. We need the applied power of science beyond any other State. Shall the legislature of Illinois, at its different sessions, give her hundreds of thousands to her Industrial University—as she has actually done, and with far less need than Missouri—and shall we refuse a far less amount, a mere pittance, compared with the greatness of the object? We must have these institutions of science. If we do not establish and maintain them, other States will do it for us, and send their men to do our work. We must have them equipped and furnished in the best manner. It is too late in the day to deny their value. Why, sir, there is not a month in the year that we do not lose and waste more for the want of proper science than we are now asking by this bill, both for the School of Mines at Rolla, and the Agricultural and Mechanical College at Columbia.

COMMON SCHOOLS.

No man can say I have ever halted or held back as to our common schools. I have been at all times, and everywhere, according to the full measure of my feeble abilities, for the widest diffusion of elementary knowledge. Sir, I would make it universal; as free as the air that we breathe, and as the sunlight of heaven. I would extend it to every human being, no matter what complexion an Indian, an American or an African sun may have burnt upon him. I would, to the utmost of my power, perfect our scheme of universal popular education. I would plant the school house in every neighborhood; I would bring it to the door of the humblest sun-burnt peasant; I would, to use the words of the great American historian, Bancroft, "have the genius of the State take every child as it is born, no matter in what poverty or degradation, and, lifting it from its humble origin, throw around it the arms of protection, and endow it with the heritage of knowledge as its inalienable birthright."

THE HIGHER INSTITUTIONS.

When it comes to those higher institutions for the promotion of human knowledge, which the State is bound equally to provide, and which require the aggregation of libraries and buildings, apparatus and professors and students, in all departments I have been and am for concentration. It is the only possible way of success. In the words of Ezra Cornell, "I would found an institution where any person can find instruction in any study."

THE STATE UNIVERSITY AND ITS PROPER SUPPORT.

This is the State University, with all its departments as idealized in our State Constitution, and such as we are laboring to build up at Columbia, a locality central in position, and in all respects suitable, with one of its departments, the School of Mines and Metallurgy, located at Rolla, in the county of Phelps; there located by the policy of the Legislature, on account of the variety of minerals found in that district of the State, and the mining operations there carried on, and yet still more to be carried on in the future—such an institution as we can, with its present means and a happy combination of circumstances, build up with comparatively small aid from the State. To-day we are actually asking less than States around us are freely giving to their universities, almost without argument, and upon the reports of their wants, after examination of committees. After the same judicious plan, a joint committee of the two houses, composed of fifteen members, have made their examinations, and report the smallest appropriations necessary to meet the most urgent wants of the industrial departments of the institution. May we hope that the same action will take place in this enlightened body, and in the same spirit, which took place in the Michigan legislature but the last winter? Judge Walker, in his address at the recent inauguration of President Angell, says: "The committees of the legislature came to see and learn our necessities and wants—they made their reports, and recommended the appropriation of $75,000 for a recitation-room building; without lobbying or besieging the halls of legislation, the appropriation was promptly and freely made." But two years before that the legislature had appropriated a sum of $15,000 a year, making the annual income of the institution now over $100,000. Michigan University is a great success; her fame has gone to every civilized country. She has, at this very time, no less than *twenty-eight students* from Missouri. The University of Michigan has been a success, and has achieved fame for the State, simply because she has had the means to do so. Can it be expected that we can do the same work with less than one-fourth of the means, to say nothing of her accumulated capital in the form of libraries and other indispensable appointments?

GROWTH AND DEVELOPMENT OF THE STATE UNIVERSITY.

No State institution of learning can achieve its true end, or do honor to its State, without the means to do so. This is the simplest truism;

yet I doubt whether any five years progress of Michigan has surpassed the progress of our own University during the past five years, and since the State gave its first aid. It is the professional schools of law and medicine which gather the large number of students at Ann Arbor and give to the institution its wide-spread fame. Ours, with its present semester, or half year, reaches over three hundred entrances—only fifty less than the far-famed University of Virginia, even with her professional schools, and equal to three-fifths of Michigan, without the professional schools.

THE STUDENTS NOT BOYS, BUT MEN, AND REPRESENTING ALL PARTS OF THE STATE.

It is, too, a most gratifying fact, that while the students are (with the exception of less than a dozen) from Missouri, they are in about equal numbers north of the river and south of it, and from all parts of the State, about as well distributed as are the members of this General Assembly. They are not, either, mere boys, but men, (excepting thirty young women), and fairly represent the rising talent and influence of the State. Had younger students been encouraged to enter the institution the count of numbers would have been much greater.

PROSPECTS IF NECESSARY MEANS ARE GIVEN.

With the necessary aid from the State to meet the present exigencies of the institution in the completion and proper equipment of the industrial departments, so that chemistry may be taught, by the student himself making analyses of soils and minerals, and that other branches may be taught in the same way by practice and experiment, we may expect a very large increase of numbers. It is of the utmost consequence that we do all in our power to maintain the continued and growing prosperity of the institution and all its departments. It was Napoleon the Great who said, "Nothing is so successful as success." Success begets success. This is a law in human affairs. With the aid now asked for, the next year will be more prosperous than any which has preceded. We have good reason to expect and believe that the institution will soon come up to the standard of the first American institutions, and that its position as such will be everywhere felt and acknowledged, and that it will confer honor upon the State itself.

THE OTHER SIDE.

But, sir, I will not contemplate the other side of the picture. If nothing should be done, this State institution will not only have reached its goal, but there is great reason to fear that it will actually fall back;

professors will be discouraged, students will be disappointed; and what will the farmers and mechanics and miners say, and have reason to say?

WHAT THE AGRICULTURISTS, THE MECHANICS AND MINERS WILL SAY.

May they not say, and will they not say, "The lawyers and the doctors and other professional men have their schools with public endowments; we now, for the *first* time in the history of the State, come forward with our petition for aid in a kind of education adapted to our peculiar wants. We want the means of experiment and practice. We must have them, if we are to keep pace with the spirit and progress of the times. We ask less for our industrial institutions than has been granted in Iowa, or Illinois, or Kansas, or even in the new and feeble State of Nebraska, with her 120,000 people and $100,000,000 and less of taxables.

"We have the literary and scientific advantages of the University, and hence ask only for the Industrial Department—the department set aside for us, the farmers, the mechanics and the miners." So wisely have these interests been administered, and such the economy of connecting the Industrial Department with it, that our call upon the State treasury is one-half, and even two-thirds, less than in those States where a different policy has been pursued. Shall we then, Mr. President, turn our backs upon such appeal?

THE EFFECT OF NOT TRULY REPRESENTING THE INDUSTRIAL CLASSES.

If we do, there is not an agricultural paper in the State, or out of it, that will not express regret and dissatisfaction; there is not an agricultural or mechanical association, nor an industrial convention, where are concentrated the intelligence of our people on these subjects, which will not seek to reverse our action and procure a right representation of their feelings and interests. If there is anything in regard to which there is unanimity among the best industrial men everywhere, it is as to the education which they require, and the education which they will have.

EFFECT UPON THE GROWTH AND PROSPECTS OF THE UNIVERSITY AND ALL ITS DEPARTMENTS.

If I could conceive that the legislature will not act favorably upon the bill before us, that it will not meet the pressing wants and necessities of the institution, as reported and recommended by the committee, there must be great discouragement; there will be reaction, and must be. The students in the agricultural department, who entered upon their studies at the opening of the school, cannot have the practical chemistry in the analysis of soils which belongs to their last year's course; the building, now covered and closed in, will stand desolate, unfinished and unoccupied. This condition of things produces its injurious effect upon all departments of the institution, and upon the public mind. We must not, sir, by our inaction, or our non-action, permit this condition of things. We must not lose the prestige of yearly progress. We must not lose what it will require years of labor to regain. We must not stop the impulse which is carrying us forward. That the State will make the necessary appropriations, as every State is making them, or has already made them, no man can seriously doubt. Now, *now* is the time to make the smallest sum count the most in carrying forward this great interest. Next year, or the year after, it will not do. There is a crisis in the affairs of men, and nations, and institutions of learning.

"There is a tide in the affairs of men,
Which, taken at the flood, leads on to fortune.
Omitted, all the voyage of their life
Is bound in shallows and in miseries."

THE AGRICULTURAL COLLEGE LAND GRANT.

But, Mr. President, we reach another very important point in our plea for our industrial institutions. How came we by the agricultural and mechanical fund, which is to endow and support these institutions, or rather by those lands which, when disposed of, are to give us (the State of Missouri) a fund for this object? They are the gift of Congress to the State; and a like gift, in the ratio of representation, was made to all the States. How came Congress to make this grant or gift? The history is an interesting one, and well illustrates the character of our energetic, practical business men. They had become thoroughly convinced, by their own wants and deficiencies, and after discussion in pamphlets and newspapers, and in conversation, that there must be a new class of institutions, or an enlargement of American education as then existing, to meet the specific wants of the industrial classes. They went with their demand to Congress. By petition, by agitation in every possible way, by delegations to Congress, by correspondence throughout the country, they pressed their demand. After a great struggle, after reports and counter reports by committees, and after a Presidential veto, they finally succeeded, as this class of men, the bone and sinew of the land, always will succeed. Think you, sir, if we vote them down now and here, that they will not have their Missouri industrial institution—their agricultural college and mining school? The grant of land was made in area equal to Massachusetts, Connecticut and Rhode Island, and in value equal to $15,000,000, and what for? I answer in the words of the grant itself, "to promote the liberal and practical education of the industrial classes." No such magnificent grant for objects of education was ever before made. The institutions endowed and growing out of this grant cannot but produce an effect upon American civilization. The grant has already produced its effect upon our American institutions of education. It has encouraged and stimulated the States. It has awakened individual munificence, so that within the last ten years (since the grant was made, July 2, 1862), such gifts have been made to American institutions of learning as never in the history or the world, nor any where, have been made to any object or for any purpose. The specific object of the grant is for industrial education—to unite, if you please, head-work and hand-work; to guide muscle by brain; to get more from the soil; to multiply and, at the same, save labor by machinery and invention; to improve the breed of all domestic animals; to aid in mining operations and the reduction of ores; to assist the geologist, the mineralogist and the chemist—in short, to enable men to live better, and with less labor, by better understanding the laws of nature.

THE OBLIGATIONS OF THE STATE INCURRED BY ACCEPTING THE GRANT.

But there were conditions attached to the grant—it could only be accepted with obligations attached. The States were to receive, but they were also to do. Not a State refused the grant, and they each agreed to perform the conditions and requirements of the act of Congress making the grant—they, in fact, entered into a solemn contract to do certain things. The State of Missouri, by the act of the General Assembly, formally accepted the grant, amounting, in her case, (not counting the reduction of acres when lands within the railroad belt were taken), to 330,000 acres, and assumed all the obligations imposed by the law of Congress.

The following is the resolution passed unanimously by the General Assembly of this State, approved March 17, 1863: "Be it

> "*Resolved* by the General Assembly of the State of Missouri, That the said act of the Congress of the United States is assented to and accepted by the State of Missouri, with all the conditions, restrictions and limitations therein contained, and the faith of the State of Missouri is hereby pledged to the faithful performance of the trust hereby created."

Now, what are these obligations, for the performance of which the faith of the State is pledged? I cannot present them in any better form than in the report of the condition of the University, which I had the honor to make to the Governor, as President of the Board of Curators, in June last, as required by law. I will, if you please, read from that document, as the conditions and obligations of the State are therein presented:

1. "The State must provide at least one college, 'the object of which shall be' to teach 'branches of learning related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life;'

'other scientific and classical studies' are not to be excluded, 'and military tactics' are to be included."

How shall the State perform this duty? Shall it be in an enlarged and noble spirit, worthy the State, and worthy the beneficence of the general government?

2. "All expenses of location, management, superintendence, etc., of the lands granted, 'and all the expenses in the management and disbursement of the moneys received therefrom, must be paid by the State out of the treasury of the State,' so that the entire proceeds shall be applied, without any diminution whatever, to the proposed object."

Expenses in the selection and appraisment of these lands have been incurred from time to time, and have been, under the authority of law, paid from "the treasury of the State."

3. "No part of the fund nor the interest thereon shall be applied, directly or indirectly, under any pretence whatever, to the purchase, erection, preservation, or repair of any building or buildings."

This makes it necessary that the State should provide buildings. It is most honorable to our American States, East and West, that they have liberally provided, under the requirements of the Congressional act, not only buildings, but apparatus, libraries, stock for farms, and other material aids of instruction. Here is a worthy State rivalry—most beneficial to the State—most honorable to the general government, which has bestowed so liberally for objects calculated to advance civilization itself.

4. "The State, by its act of acceptance, guarantees the capital of the fund, so that if, by any action or contingency, it shall be diminished or lost, the State is bound to replace it.

"No grant ever heretofore made by Congress has been so carefully guarded from waste or misuse, by the very terms of the grant. Let Missouri do her part to make the most of the grant which falls to her by the bounty of the general government."

This, Mr. President and Senators, seems to me to be required by the obligations of contract and State faith; and yet, permit me to say, in even a *higher* degree by the considerations of honor and pride, and of duty, to that large class, the laboring men and women of the State, for whose special benefit Congress, in its beneficence and enlarged views, designed this noble gift.

In the great and noble enterprise of establishing a new and better adapted system of education in the United States—a practical education, without the special ornaments of elegant literature, for a practical and working people—Congress did a noble part, but the States were required to come in and give their aid and co-operation. This was wisely done. And most magnificently have they responded. In the Eastern States it has been largely by individual munificence, and in the Western States by grants and aid from Legislatures.

MISSOURI HAS THUS FAR DONE NOTHING.

How has Missouri responded? Has she done her part? Has she come up to the standard of other States? Though having more industrial interests than any other State, a wider range and greater variety of employments—pursuits especially requiring the application of science—how has she responded to the munificence of Congress? The answer which we must give is, she has done NOTHING, absolutely NOTHING; not a dollar, Mr. President, beyond the payment of expenses of selecting and appraising the land. She has, at Columbia, a magnificent domain of land for which she paid nothing; she has a noble central university edifice, with some eight or ten other buildings, worth, in the aggregate, more than a quarter of a million of dollars, and they cost her not a dollar, with the exception of ten thousand dollars, appropriated by an act of the General Assembly of the State, approved March 11, 1867, for the purpose of aiding in rebuilding the President's house, which had been destroyed by fire; and that is all for this 670 acres of land and these buildings intended for the comfort and accommodation of all the sons and daughters of the State. I ask, sir, has any other State got so much for so little?

BONUS OF BOONE COUNTY.

Even the industrial scientific building, for the furnishing and equipment of which this bill, reported by the committee, provides, is up and inclosed without expense to the State, and most admirably adapted to the purposes for which it is intended. The bonus of Boone county, to the extent of $20,000, has been expended upon it, and there remains upon it a debt to the contractors of $10,000. To finish this building, and equip and prepare it for practical purposes, an appropriation is asked in the bill now under consideration.

Mr. President, though I have been familiar from the beginning with the generous gifts of Boone county to the State, made in the midst of trial and difficulty, and, I may say, poverty and pecuniary stringency, yet, when I look at the amount in the aggregate, and look at the results in the State, by buildings now belonging to the State, and for the benefit of all the children of the State, I confess I am myself utterly amazed. They are monuments of which not only the people of the county of Boone, but the State itself may be justly proud.

THE FAITH OF THE STATE PLEDGED.

This General Assembly surely cannot consider it too much now to be called upon to carry out, in good faith, the establishment of the Agricultural College, by the erection of suitable buildings and by other necessary preparations, to complete the institution. Is not, indeed, that the very thing that Boone county bargained for in the gift of $90,000 as a bonus, every dollar of which has been paid, for the location of the

Agricultural College? She supposed that by this gift she had obtained the Agricultural and Mechanical College, and that the State would meet the solemn pledge made on the acceptance of the Congressional land grant, to furnish all that was necessary to complete it.

Now, I ask, does not good faith to our own citizens, as well as to the United States Government, require to be made, the appropriation provided in this bill for the benefit of the Agricultural College?

HONORABLE ACTION OF BOONE COUNTY.

It was in no stinted or niggardly spirit that Boone county on her part fulfilled her engagement with the State. Let us hear the report of the Commissioners on the part of the State, such men as Judge Bliss, Edward Wyman and Prof. Matthias.

After such examination, and certifying to the correctness of the title papers to the land, and that the money was duly paid over to the credit of the University, they certify in the following terms:

"That having examined said tract of land, we found the same handsomely improved with valuable buildings, diversified with a variety of soil, well watered and timbered, and admirably adapted for the uses and purposes of the Agricultural and Mechanical College; and we further certify, that in extent and character this part of their donation, with the amount of money they have expended to secure it, Boone county has fully and honorably met every reasonable expectation, and satisfactorily complied with the obligations incurred to the State in the matter of the location of the Agricultural College."

This remarkable declaration, in an official document, made at the instance of the Commissioners from different and distant parts of the State, is most honorable to Boone county, and shows her worthy to be the site of a great institution of learning.

She did not higgle over the price of the land she was to give, or attempt to put the State off with that which was inferior or low priced, or unsuitable or unimproved. She came nobly up to all she had promised, and to more than she promised. Shall this great State fall below the fair dealing and generosity of one of her counties? No, sir, no; she will never do it.

EQUALLY HONORABLE ACTION OF PHELPS COUNTY.

And the same argument, Mr. President, applies with equal force to the School of Mines and Metallurgy. It is a department, made so by law, in the same institution, located, it is true, in a different part of the State, but intended, by a proper education, to prepare men for making discoveries, analyzing and developing the wonderful mineral resources in the south part of the State. And what a heritage it will be to us and our children; what a source of wealth and material power to the State when that vast region—stretching from the Mississippi river across the State westward to the Indian Territory, and southward to the State of Arkansas, mineral deposits in nearly every county, and equal in utility and variety to the minerals found in any other State of the Union—shall be carefully explored by practical scientific men, and their hidden treasures touched by the wand of science, from which will gush forth streams of wealth now beyond our view, to enrich the treasury of your State, and to be utilized to supply the wants and increase the comforts of all who are to inhabit this great valley. Sir, what may not a School of Mines, located in the very heart of such a bountiful region, and wisely directed, be to the youth and the people of the State? Sir, the county of Phelps has acted no less generously than the county of Boone, in securing this institution, and the same obligation rests upon the Legislature to furnish and equip all the buildings necessary to put the school into successful operation. Already the school is organized, under the direction of an efficient and accomplished scholar, Professor Chas. P. Williams, with two able young men as his assistants. Proper buildings are now only needed to make it a success.

These twin daughters of a common mother, born simultaneously into existence, the Agricultural College and the School of Mines, controlled by the same corporate authority, located on either side of our great river, and constituting a perpetual bond of sympathy betwixt the working men of North and of South Missouri; the one intended to advance in intelligence and power the great agricultural interests of the State, and upon whose success depends all private and public prosperity; and the other established to develop that wonderful source of material power which has enriched every people in the world's history who have possessed it. The iron and lead and other rich mineral deposits that are found so abundantly within our borders will, if cherished by a liberal and enlightened State policy, in time secure to all our people, if not the largest wealth, all the comforts and the choicest blessings of life.

In order that we may see how large has been this liberality both on the part of Phelps and Boone counties, the following statement is presented:

Gifts of individuals in Boone County, in order to secure the location of the University, made in the year 1839	$117,500 00
Rollins' Aid Fund—	
A bequest by Dr. Anthony W. Rollins, to aid young men and women in their education. The proceeds placed at the disposal of the President of the University—now amounting in gross to	30,000 00
Gift of Boone county, to secure location of Agricultural College,	80,000 00
Town of Columbia for the same	10,000 00
Gift of Phelps county to secure Mining School at Rolla	130,545 00
Total	$368,045 00

To the above is to be added $500, the sum guaranteed by J. L. Stephens, Esq., Columbia, to found the Stephens' prize.

RAPID INCREASE OF WEALTH AND POPULATION.

But, sir, I wish to put the proposed measure of aid and relief to the State University, with its agricultural and mechanical departments, and its school of mines, upon more liberal and higher grounds than those of mere contract, if, indeed, there can be any higher. I have endeavored to do so. I would make my appeal to a great and magnanimous State, increasing with unexampled rapidity in every element of power and of wealth. Our population now is more than 1,800,000 inhabitants. It will, during the present decade, reach at least 2,500,000. But wealth increases in yet a higher ratio. I have not the census tables of 1870—they are not yet published—but in every prosperous country wealth increases in a greater ratio than population. The actual increase of wealth in the United States from 1850 to 1860 was, according to the census of 1860, no less than 130 per cent., while the increase of population was a fraction of under 36 per cent. The increase of wealth in Missouri from 1870 to 1880 will be in a yet higher ratio. It cannot be less than 200 per cent. The small amount asked in this bill, and for other State institutions, is not even worthy of thought or consideration, in view of such facts and figures.

SENATOR MORRILL'S NEW BILL.

It is a matter of pride that, while Congress has done so much, the different State Legislatures have, without exception, thus far, done a noble part towards building up the Industrial Colleges. This has encouraged Senator Morrill, who introduced the original bill donating land to the States for the benefit of colleges of agriculture and the mechanic arts, to introduce a new bill making still further donations for the same object.

SHALL MISSOURI FAIL?

And shall Missouri alone fail, of all the American States, in the grand work of supporting her Agricultural College and School of Mines? It must not, and cannot be. We cannot maintain our rank as a State and do so.

EXAMPLE OF OTHER STATES.

Mr. President, we are too largely influenced by the action of others; we are as individuals, and no less as States. Could any State, for example, maintain its rank at this day as a Christian and civilized community, which shall fail in its establishment and support of what are called the State benevolent institutions, such as lunatic asylums, deaf and dumb and blind asylums? Surely not. And have not the State Universities become part and parcel of State civilization, and under our Constitution, quoted above, a part of the State system? And can a State at this day refuse support to her institutions of this character? No State can do it —Missouri cannot. She must come up to the standard of the times, or fall back in public consideration—she must stand abreast with her sister States in the great work of educational advancement. I beg here again to read from the report, to which I have referred, to show what other States have done for their State institutions of education:

"The present General Assembly of Illinois, at its different sessions, as the Secretary of State writes Dr. Read, appropriated to the Illinois Industrial University a sum total of no less than $265,200; and this over and above all former appropriations and its large income from endowments.

"The State of California gave her University at Oakland $245,000 in coin, in order to start it in a manner worthy the State and becoming its high destiny.

"Michigan, Wisconsin, Iowa, Minnesota, and even Nebraska, have made provisions for their Universities and Industrial Institutions by the appropriation of thousands of dollars, and of even hundreds of thousands. Nebraska gave $150,000 for the erection of her University buildings.

"No State has better understood how to raise up a race of great men among her sons than Virginia. According to a recent statement of the chairman of the faculty, the State has given to her University a grand total of $1,044,304. She has given tuition fees to 1,081 students, known as State students, and has boarded a large number free of charge. It is estimated by the same authority that the amount brought into and retained in the State by the university is no less than $4,476,800. Even in the days of her poverty she forgets not her university. The recent appropriations amount to $82,545.

"Shall great Central Missouri, so rich in all the elements of wealth and civilization, fall far below her sister States around her? or rather, shall she not be pointed to as a model and example, for her spirit and liberality in sustaining her university upon the broad basis upon which, by her constitution and laws, she has established it?"

To this statement much more might be added, showing such munificence in behalf of institutions of learning as the world has never before witnessed.

A STATE UNIVERSITY TO BE PROUD OF.

We have, sir, sufficiently seen the evils of poor, starveling institutions, having credit neither at home nor abroad, with high-sounding names and lofty pretensions, having no means whatever for that scientific instruction which the present status of education requires. The country is sick of them. We surely do not want the first educational institution under the patronage of the State to be of this class. As citizens of Missouri, we want it to be of the very highest type, so that we shall have a just State pride in it—so that the stranger or foreigner, when he thinks of Missouri, will think of her great industrial institutions as part and parcel of the State, just as when he thinks of Michigan, her University is first in his thoughts, or of Connecticut, he thinks of Yale College, or of Virginia, her great University rises spontaneously to his mind. As Missourians, we cannot have our University any less. We have already excellent foundations. We can soon realize our best and highest wishes. Already our institution is beginning to command the attention of the most distinguished educators. Its plans and method are beginning to attract attention. Will you neglect it for the want of nutriment? Will you ignore it or pass it by, just as it is beginning to assume a position amongst the great institutions of the nation?

ITS DOORS TO BE WIDE OPEN.

I would, Mr. President, by every proper inducement, by affording every encouragement, by furnishing the highest advantages, call in the youth of the State by hundreds, if not by thousands. I would make it a great fountain of knowledge in all departments. I would throw wide open its doors, and invite all to enter its portals without money and without price. I would place it above and far beyond the polluting influence of party strife and contention, and equally so of the contests of religious sects. It should be sacred to knowledge, a sound Christian morality, and the best interests of civilization. This, sir, is my ideal of the State University of Missouri, and this you have it in your power to make it. Let this bill become a law, and its stability and prosperity will, in my judgment, be assured.

[B.]

SCHOOL OF MINES.

Address delivered upon the occasion of the formal opening of the School of Mines at Rolla, on the 23d of November, 1871, by DANIEL READ, LL.D., President of the University.

I meet you here to-day, my fellow citizens, on one of those occasions which to the ordinary or unreflecting observer may seem to be of little moment. Large and respectable as is this audience, yet no immense gathering crowds are here present, as upon some grand State occasion, to solemnize it with pomp and show. The newspapers of the State may perhaps notice the fact, that the School of Mines connected with the University of the State was formally opened in the town of Rolla on this, the 23d day of November, in the year of our Lord, 1871, with an attendance of students quite as large as under the circumstances could be expected.

Yet this occasion, insignificant as it may seem to some, makes a part of the history of this great State for all time to come. We are to-day, in opening this school, performing a *historic* act. Not so with many of those occasions (I may say with most of them) which attract present attention, and even a wide-spread notoriety. They pass away with the noise and bustle which they create, and leave behind them no permanent record—no enduring monument. How different the work of this hour! This school now commencing will last as long as the State itself. Nay, should the State change—should it become dissevered from our great republic—not change, or revolution, or dissolution, or the shock of war would destroy this institution of science. Nothing short of the destruction of civilization itself can blot out or efface the beginnings which we now and here make.

That lofty and commanding spot known as Fort Wyman, and celebrated for the grandeur of its position and the extent of its scenery, and upon which is to be erected the magnificent edifice already designed, is dedicated forever to the School of Mines. The contract by the State, and with you as citizens of the State, can never be revoked or annulled. Yes, citizens, the price you gave, the purchase you made is for all time; and not until law shall be swept away by revolution, and courts of justice shall cease to have power in the land, can these solemn contracts and dedications be set at nought. Even the buildings which we erect for the uses of the school may perish in the flames, or crumble under the influence of time—the great Destroyer—but the school itself will survive all material disasters, as well as political or governmental changes.

It is a sublime reflection that we are standing here at the fountainhead of a stream which shall flow on through the ages! It gives dignity to the humblest beginnings, it awakens feelings of awe, and inspires us with a sense of the greatness of this scene. I care not what may be the number of students who here present themselves, and from this good hour receive their instructions as the first members of the school—whether that number be five or twenty-five, or treble twenty-five, or even but a single pupil, as was the case at the opening of the first normal school in Massachusetts, or as was the case at the opening of the now great University of Michigan, thirty years ago, when there was present one Professor (Prof. Williams, still a Professor in the University), and one solitary pupil. It is, nevertheless, the beginning of a State system of instruction in a special department, or rather, shall I not say, it is the culmination, the completion of the great system of public education for the people of Missouri. It is an event of far more consequence than when the corner-stone of the building designed for its use shall be laid in the midst of pomp and ceremony, and the acclamations of spectators. That will be but the outer temple, this the spirit; that the dwelling, this the inhabitant, giving it all its interest and significance. I do not, then, impute too much importance to this occasion when I say it is HISTORIC—an event in the history of the State of Missouri.

But there is still another reflection. This school, which we here found, is a part of the great system of public instruction to be established and maintained by the State. What is that system? What does it embrace? In the first place, it embraces the grand scheme of common schools, the schools to be planted everywhere, and everywhere throughout the broad limits of our land to bless our children, and give to each child born in Missouri the heritage of knowledge. And when I say "*common*," do not, I pray you, understand me as meaning inferior or mean, but common, just as all the best and most precious gifts of Providence are common—the sun-light, the air we breathe, the water which purifies, or the heat which warms and nourishes. This beautiful building, so great an ornament to this town and such an honor to its people, belongs to the common school system, and is but one of scores like it rising all over the State, illustrating the character of our commonwealth.

Then, in the second place, and as a part of our public system, we have our normal schools, to prepare the great army of teachers who are to go forth and supply our common schools, not only the normal department of the University, but also the normal schools in the two great divisions of the State. We have here present, honoring this occasion, a body of teachers (and I am proud of their presence), who are together to consult for their own improvement and how better to do their parts in this system.

We have also the State University placed as the recognized head of the scheme of public instruction, and embracing among its other colleges the College of Agriculture and Mechanic Arts, and also this School of Mines, the opening of which we now celebrate.

The occasion, then, derives additional consideration from the fact that our Mining School does not stand isolated and alone, but stands connected with the University, and also, through it, with the grand educational system of the State, established by its organic law. This is its position, and it will be looked to with interest by all the true friends of education in Missouri.

To have such an institution in your midst, thus to be sustained by the State, and making part of its system of instruction, was worth the competition of a generous and enterprising people; and most nobly did you enter the lists, and by your splendid gift of more than one hundred and thirty thousand dollars win the prize; and here let me say, you did not pay too dearly for it—no, nor would it have been too dear had you paid twice as much as you were required to do. The day the school was located here it was worth to you a million of dollars. The county of Phelps is worth to-day that much more, in consequence of this location; and I am here speaking of cash values only. The consideration which your county has, and is to have, from this institution, adds to the value of every acre of land within its limits. A plain farmer from Michigan once said to me, "there is not an acre of land in my State but has a greater value in dollars and cents from our State University." I say to you, the citizens of Phelps county, you have made a most excellent bargain.

But what is this school to be—what the kind of education we are here to impart? What do we propose—in short, what is the design? It is not necessary here to enter into any elaborate discussion on the philosophy of education; neither the present time, nor our present surroundings, require or will permit. There are, however, certain principles in regard to which we may all agree.

The great fact of our times is, a new civilization has sprung upon the world. More has actually been done for the advancement of our race and the comfort of human life in our own day, than in two preceding centuries, if not in all time. This has come about largely by better understanding the laws of nature—by understanding (and shall I say utilizing) the tremendous forces around us, on the earth and under the earth, in the air and in the water. Steam and lightning, and heat and chemical forces, and the mechanical power, have become the great agencies in the hands of Science to create this new civilization, and complete "the dominion of man over all the earth," and to bring together, in one brotherhood of humanity, all kindreds and nations and tongues. Why, what was the whole world of the ancients but a patch of earth around the Mediterranean, and a few countries lying off toward the Euphrates, and some other inhospitable regions stretching north and westward to the Danube and the Rhine? But *our* earth, under the guidance of science, is this whole "terrestrial ball;" and there is hardly a nook or corner which is not subdued to the uses of man. Mr. Seward makes the circuit of its entire sphere in a few months, and upon reaching home declares he has hardly suffered a discomfort. These things almost surpass belief, and we are ready to say, what may not man now do. They would indeed have been miracles, or rather impossibilities, even to imagination, in other times; yet they are such miracles as we have ourselves seen and known.

The spanning of this Continent with thousands of miles of railroad, the opening of the Suez Canal, the tunneling of the Alps or the Hoosac, the bridging of rivers for railroad passage, the electro-telegraph stretched over the Continent and under the seas; these are almost too great for our grasp, though they are the achievements of our own times. Yet wonderful as they are, even greater wonders are yet to be exhibited. Science has but just commenced her marvels. All the possibilities of our race upon this earth are bound up in her developments. We cannot, indeed, tell in what direction will be her discoveries, but come they will, and come they must, just so sure as this is a sound principle which has been laid down by our greatest scientific writers, "that those who know the most will learn the most in addition; and that the most valuable discoveries and inventions will be reached by those who, having a sound knowledge of general principles and previous labor, can devote their whole force to the development of the new and the possible, and waste no energy on the redevelopment of what has already been exhausted, or in devising combinations utterly ineffective." So rapid is the advance of discovery, that new improvements are hardly put into operation before they are superseded by others still better. Thus must invention and improvement and discovery go forward, until our world shall be relieved of half its toils and labors and ills.

And what, let me ask, is Science? Nothing but a knowledge of the laws by which God, the Almighty Creator, governs the universe. What its applications? Nothing but conforming our practice to these laws, and availing ourselves of the goodness of God in providing for our race. The great business of Science is to find out these laws, and then to apply them in the moral and physical world; and when this shall be completely done, were it possible, we shall have a perfect condition here upon earth.

This school is to be a school both of science and of its applications; its purpose is to teach knowledge and art—first to know, and then to do, and to do in the best manner. The popular objection to our colleges takes this form: "*too much theory—too little practice.*" As an educator, I have long been convinced that, even as a part of discipline itself, the *practical* should follow the *theoretic*, as its natural complement and sequel, and without this all discipline is defective and insufficient.

There has been a great struggle on the question, what shall the education of our higher institutions be? nor is the question yet settled. There is perhaps no subject upon which it is more difficult to break away from our natural conservatism—perhaps I had better say, our old prejudices—than on education. We cling not only to the subjects and methods in which we have been taught, but even tolerate usages connected with our institutions which almost outrage humanity. I might name the abominable and inhuman custom of "fagging," which even yet prevails in the great English schools of Eton and Westminster, and customs equally barbarous, as "hazing the fresh," which prevail in American colleges, and are tolerated only because they have come down from preceding generations.

But, after all, change does take place in education, and must take place. The human mind cannot be clamped and boxed up, using the figure of Longinus, to prevent its proper growth, expansion and adaptation. The world changes, it advances in a thousand ways—new arts are invented. No process of art has any value except for the present—it is soon swept away by new and better methods, or by the general progress. Such sciences as chemistry, geology, or mineralogy, did not exist even in conception at the time the *trivium* and *quadrivium* of the universities were adopted as the established courses. Laws, governments, civilization change, or are constructed anew. Change is the very order of universal nature; and men must be educated for their own times and relations—for the condition of the world as it now is, and not as it was in other ages, or as it is even in other countries.

The philosophy of the human mind too is better understood than formerly; and this improved knowledge has introduced improved methods in the treatment of insanity, in the punishment of crime, in the administration of government, in city police; it has greatly improved the rules of evidence in judicial proceedings, and has overthrown maxims of law so absurd that we are amazed that they could ever have existed. I cannot illustrate, but I have myself seen at Salem the very pins said and proved to have been thrust into the bodies of women and children by the witches who were executed there, and which were actually taken from the bodies of their victims! Could such facts be established, I ask, under our improved rules of evidence resulting from a true philosophy of the mind? Shall education alone remain unchanged? It has changed, and must still further change. If we go back, and not very far into the centuries, the Logic of the Schoolmen, with all the jargon of quiddities and entities, of categories, etc., was the only recognized study for mental discipline, and in fact constituted the sum total of liberal education. And it was a wonderful system to sharpen the human intellect; but, in the words of Bacon, it was "barren and produced no fruit."

Then came the classic period of education. This was a great improvement—not superior in sharpening the wits of men, but a wider, better, and broader culture. Where this kind of education assumed to swallow up all else it was wrong, one-sided and inadequate. Why even to this day, in some of the most renowned schools of England, little else than Latin and Greek are taught, with not even arithmetic enough for ordinary accounts.

Your institution here to-day is the outgrowth of the new education, it is the result of a sharp and long-continued contest. I am old enough to have witnessed the change, and to have borne a hand (shall I admit it?) on both sides of the question. The prejudices of early education, natural taste, the pursuits of Professorial life, a fondness for classical criticism, caused me to over-value what I best understood and upon which I had spent years of study. Thus much I may be permitted to say as to myself. I do not now under-value any part of education—whether that of science or of letters. But this I do say, in the shortness of human life, after proper rudimentary training, we must resort to special courses. This is the tendency of our great Universities, and with this freedom of courses there is no reason to keep up controversy. Time will solve problems which now disturb the minds of men, and doubtless will sweep away many of our most cherished opinions. But on the subject of an adapted or special education, there cannot be longer dispute among thinking men.

But let us for a moment revert to the history of scientific education, and the scientific schools and departments which have sprung up in our country within forty years, and most of them within less than half that time, indeed, within a decade of years.

When the Polytechnic School—the Van Ransallear, I believe it was called—was established at Troy, and still later, when such a school was proposed at Cambridge in connexion with Harvard, though to be endowed by a single individual (Abbott Lawrence), without touching a dollar of college funds, an outcry was raised, as though the barbarians had for the first time assaulted Rome—as though all learning was to perish. Still, the new idea advanced and spread. There were men all over the nation who had awakened to the idea of a more enlarged education—practical and energetic men—the men who were digging up our ore, building our railroads, erecting our great manufactories and machine shops, spanning our rivers with bridges, navigating the ocean and our great rivers and lakes, stretching the telegraphic wires over continents like nerves over the human body, improving the soil and stimulating the productive energies of the earth—men who did not feel satisfied with the church colleges which had sprung up mainly to furnish the church with ministers of the Gospel, and defenders of the faith of the bodies which they respectively represented. These men were such as the Lawrences, and the Sheffields, and the Pardees, and the Cornells, and the Packers of a later period, and indeed many others. These men said, we have no time to discuss the questions of the classics or the lore of past times, but here is the money for the founding of practical and special schools, for schools to apply science to the arts. We have faith that something may be done in this kind of education, and, of all countries, ours most needs it.

Though the private gifts were large, and in some cases almost imperial, the masses, and especially in those States where the industries most flourished, were not satisfied, and demanded the aid of Congress in behalf of an education which, in its specific character, had no existence at the time the policy of giving two townships to the States for a University was established by the government. We have not time for a history of the contest in Congress growing out of this demand. But it is sufficient to say, in the midst of all kinds of opposition, and even a veto by the President, a bill was finally passed making the magnificent grant of lands worth from twelve to fifteen millions of dollars, and what for? The bill itself answers—"in order to promote the liberal and practical education of the industrial classes." What a noble object! Still further, this action of Congress has been followed up by such gifts and endowments from individuals, in behalf of the same object, as, I undertake to say, was never witnessed in any other age in behalf of any other object.

The change then has come—we need not fight against it; the new courses and new departments have been established; all the bulls we may fulminate in opposition will amount to no more than the Pope's bull against the comet. Even appropriate academic degrees have been established and recognized for special and scientific courses. I had supposed that the controversy was over on this subject almost twenty years since, until I heard it renewed at the late National Teachers' Association held at St. Louis, and the question raised whether these degrees ought to be recognized. Do not understand me as saying a word against "the humanities," if you so please to call polite literature, or against classical learning in particular.

Because I am for scientific courses and for special scientific schools, believing that the age requires them, it does not follow that I am opposed to any other kind of learning; or, because I might not set a young man in a mining school, for example, at his Greek and Latin

Grammar, it does not follow that I would not under the proper circumstances do it, or especially set a boy at such studies.

Dr. Angell, the new President of Michigan University, says, in his inaugural, that "during the past twenty years, not only educational journals, but the secular and religious journals, the magazines and reviews, college faculties and corporations, the patrons of colleges, and all that great company of people who are interested in the character of our higher education, have been vigorously arguing to determine what the American College should aim to be and to do." He thinks that, in all this movement, the element of highest value is the well-nigh universal avowal of the belief that there is something yet to be learned concerning the aims and methods of higher education.

I cannot but think that we have at least reached this point, that our education is to be adapted to our age, to the progress of civilization, to our institutions — that is, we must educate for the living, moving present, and not for the dead past. If I had time, I would go into the tombs of the Ptolemies, but I would not stay there.

We have, too, reached another point, and that is, that there are not certain studies to be pursued for mere mental discipline, and another class for practical objects. The truth is, the acquisition of all knowledge is disciplinary — all acquisition quickens and strengthens the mind. There is not one kind of education for mere discipline, and another for mere practice. What shall a boy learn? was a question propounded to Pythagoras. "Those things," replied the philosopher, and he replied like a philosopher, "which will be most useful to him in after life."

The studies of this school, for example, will, I doubt not, for the purposes of mere discipline, and mental development and culture, and without the slightest reference to practical ends, prove eminently beneficial. Because they are practical, it does not follow that they are not disciplinary.

But what is the direct design of this school? and I desire here to be more explicit. It is to furnish the means of thorough scientific and practical knowledge of those branches which relate to mining and the working up of the mineral resources of the country. It is, as far as possible, to supply, to those engaged in mining and metallurgical operations, agents competent to take charge of new and old works, and to conduct them upon thoroughly scientific principles. In no department of industrial effort is science so much required — nowhere is there so much waste in consequence of ignorance.

When we consider the immense and incalculable interests of Missouri connected with the ores beneath its surface, with its clays, its rocks, and its mineral waters, we must all see the propriety, nay, the necessity, of having an institution of science specially devoted to the development of the vast stores of wealth on every side around us. We see, too, why the State as a State is interested in such an institution.

There is not known to be such mineral wealth elsewhere upon the face of the earth as we have here. Our age has sometimes, in consequence of the innumerable uses to which we put iron, been called the Iron Age; and we have here, within our own borders, iron enough for the supply of the whole world—and for ages. Nowhere else is it so cheaply obtained. You enumerate some twenty economic fossils within almost the throw of a stone of the spot where the mining school building is to be erected. But I cannot go into particulars. The barest statistics of facts would seem exaggeration.

We have all the sources of wealth in the bowels of the earth which has made Great Britain the richest country in the world, and these literally inexhaustible, as they are not in Great Britain.

We have, too, our natural and artificial means of transportation. We are in the heart of the most civilized country in the world, if general intelligence constitutes civilization.

But we must have the special and thorough science to enable us to use our natural wealth to the best advantage. We must have the best science and the best experience. The State cannot do without it. It is too wasteful to do so, and we are not rich enough to afford it. We can not bear the losses and waste of labor and capital which ignorance and a want of skill entail upon us. The losses in our State within any single year, and I might say in any six months, would afford a more than princely endowment for this school.

Science has established certain facts, and these we must know. It has fixed certain laws and principles. Mining is governed by these just as much as the navigation of the ocean. Who would trust his life to one who knows nothing of the principles of science? What sagacious business man would trust his capital to chance or empiricism in exploring the depths of the earth to bring up its riches? But this particular consideration I leave to the learned professor who will follow me.

But I need not argue this. Missouri, by the wisdom of her legislature, has determined to have her School of Mines, and to have it here in the midst of minerals. Such a school in this mineral district will have its influence outside the school walls. Educators speak of what they are pleased to call "unconscious tuition." This school will exercise that function. It will create new views of the uses of science in the practical operations of life, so that its influence will be direct in the actual instruction it imparts, and indirect in awakening general inquiry. This latter use of the school must not be overlooked or undervalued. This influence will be greatest here in its neighborhood, and it will in this regard, and by inviting and stimulating capital, be worth to you many times its cost.

But what kind of a school does Missouri need for this department of her industry? And let me here ask: shall not the greatest mineral territory of the world have in it the best school? I say, yes. Missouri must have a school commensurate with the greatness of her interest and adequate to her need. She can afford nothing less. It is not merely a question of honor—and that is surely something—it is also a question of dollars and cents.

I have often been amazed at the ignorance which prevails of the simplest principles of political economy. What is our greatest want? It is not a high tariff to shut out competition; it is knowledge, the science to use aright what we have.

Let this school be made what it ought to be. The policy of the State is now fixed. The school is to be here at Rolla, and not at St. Louis nor at Columbia. It is quite useless now to enquire whether this or that might not have been better. There is not a reason why the very best of the nation in this specialty may not be here. Let other schools do their work, but this is the State school, and must be made worthy of the State. Let us all work up to this point, and for nothing less or lower.

And now, Mr. Director, permit me to turn to you. You have a great opportunity. I wish, sir, I had the science and the practical skill in this specialty, and I would most gladly take your place. You have here *a tabula rasa*—a clean sheet—to fill it up as you will. You will be permitted—such I know to be the wish and intention of the Board of Curators—in a great measure to choose your own assistants. Take those who are workers, early and late—never enquiring whether they are doing too much and grumbling at overtasks, whose maxim and motto is "*labor ipse voluptas;*" men who can work with you, and who make the school "a cause," and not a convenience. "Give me three such men," said the President of the Massachusetts Agricultural College to me, when he was starting that institution, "and I would rather have them than a whole score of dignified professors," who have more of the "*otium*" than the "*dignitas.*" If you make a mistake as to men (and this is very possible, do the best you can), let a change be made quietly, and with the least possible difficulty or feeling. We require of you success—requiring this sternly and inexorably, and without excuse, just as governments require success of their military commanders. We give you power equal to your responsibilities.

But you will be obliged to study economy of expenditure. Here you will be more hampered than I could wish. I have known professors who fancied, or seemed to fancy, that they showed their qualifications and approved themselves in their departments by large demands of books and material—expensive books, which they had, perhaps, never seen, and which, for practical purposes, would be less useful than others readily at hand—in fact, who could do nothing without exorbitant and unpractical demands—who, to use your own excellent illustration, require a pile-driver to drive a tack. It is a great thing to be able to do much with a little. I think it is a most fortunate circumstance for us, that you are immediately from an institution with small means, and where economy was a necessity. And, sir, I but use your own excellent idea in saying, it is well that learners who are to go into the field with few tests or implements, to be taught how to make experiments and illustrations by the simplest processes, are especially taught to rely upon their own contrivances and resources.

Yet do not here misunderstand me; we intend the equipments of this school shall be ample and complete, and that too, as rapidly as possible. We will never be content until they are so, and made capable of affording the best instruction, and the best means of experiment and illustration in all departments and subjects that pertain to such a school. And yet the true way to get these equipments is to do the utmost that can be done with the means you have, however small.

I am not ignorant, Mr. Director, of how large a work you have on your hands, and especially in this incipient condition. If I have not mistaken you, you have the industry and versatility, and the fertility of resource to meet the occasion. You have to teach theoretically and practically; the practice, I need not repeat, is of little consequence without the science forming the very basis of all practice, of all processes and manipulations.

Besides, sir, you have to create in this community, and in this part of the State, a sentiment in favor of the institution, an atmosphere of scientific enquiry. You have to meet unreasonable and unreasoning expectations. You have to work without adequate help, and yet I say, with all these difficulties and drawbacks, this is just such a place as I would covet. If fault-finding should come, as very likely it will, I would work right on, and should never run after a newspaper article, or a slander or misrepresentation, coming no matter in what form or from what source. It is always a waste of ink or breath to do so, and never satisfies those who do not want to be satisfied. I know well, sir, the troubles and hindrances, and wants and difficulties, and yet I almost envy you your post. Work right on, and you will hardly be conscious that they exist; they will have vanished by the time you have looked them squarely in the face. I trust, I believe, you are equal to the occasion. If you are not—I say it in all sincerity—it is a calamity to yourself and to the State that you are here. I will not even look at the shaded side of the picture. It gives me great confidence and hope that, in the midst of innumerable perplexities, I have not heard from you either by letter or mouth a single word of complaint of over-work or the hardness of your task, or otherwise.

I repeat, we demand success; and, sir, my faith is unwavering—you will succeed. Your name will go down with this school as its first Director. Under your directorship the school will become one of the most noted of the land. Your work pre-eminently requires wisdom and foresight, and a round-about perception of the condition of things. You must, as Lord Bacon says, "use Argus' hundred eyes before you raise one of Briareus' hundred hands."

But I must say a word to you—the citizens here present. You have your duties to perform in this behalf. Schools of this kind, or of any kind of high grade, are ordinarily of slow growth. This school cannot at once attain the rank of the Columbia College School of Mines, New York, yet I have full faith that it will have a rapid growth. Your earnest aid and efficient co-operation are indispensable to its speedy development. These may be rendered in many ways. Do not regard it simply as a State institution that somebody else must foster and maintain; nor for a moment admit the purpose to make a good thing out of it. That, of all others, is the way to make a very bad thing of it—honorable neither to the State, nor to the town or county of its location. Make it your own school, and the honor and ornament of your town and county.

Mr. Director, citizens of this town and county, I pledge myself to all in my power in aid of this department of the State University. I am here upon this occasion as its official head, and to render such aid, counsel and countenance as I may be able to do, and to exercise in its behalf any powers or duties that may belong to my official position. If, in the future, I can be with you to render a more positive aid, not only by my presence, but by instructions in subjects belonging to the President's chair, it will be most grateful to my feelings and consonant with my views to do so. Fellow-citizens, townsmen of Rolla, there is one great merit which I already claim at your hands. I have done at least a full share in giving you, as director of this school, Prof. Williams.

On the part of the President of the Board of Curators (Major Rollins), and the members of the Board of Curators resident in different parts of the State, I am charged to offer you greeting and congratulations on this auspicious occasion, and to express to you their sincere regrets that they cannot be present with you. And, at the same time, I am charged to proffer for them the same watchful care over this school as over any other department of the University, and their aid, by every means in their power, to render it honorable to you and the very pride of the State.

There are other Curators, who are here present to-day, to express by their presence, and by words at the proper moment, their deep interest in this school.

But it is first proper that we should hear from its Director, to whom is committed its immediate care, such words as he may deem appropriate upon this occasion of formally opening the instructions of the Mining School, as a department of the University of the State of Missouri.

[C.]

CONTRIBUTION TO A KNOWLEDGE OF THE IRON ORES OF MISSOURI.

BY PROF. CHAS. P. WILLIAMS,

Director of the School of Mines.

Two considerations led to the preparation of this slight contribution to a knowledge of the iron ores of Missouri. The first is found in the fact that the fifth section of the Agricultural Land Grant Act of Congress suggests at least, if it does not make obligatory, the publication of State industrial statistics, or of the results of experiments collected or made by the several institutions it has founded or aided. As this department of the University was established under that act, and is now working partly by its liberality, it therefore seemed eminently proper that the annual report should contain something which might be regarded as an addition to technical knowledge.

The second, and that which caused this special line of investigation to be taken up, was the fact that the School of Mines and Metallurgy is located in a section abounding in deposits of iron ores, of the distinctive or special character of which absolutely nothing was known. But few of the deposits have yet become of industrial importance, and, beyond a few commercial analyses, very little if anything has been done in the direction of a chemical investigation of the character of these ores from these deposits. Hence, it seemed that the question of most general technical interest which offered itself for more immediate solution at our hands, was that of an inquiry into the composition of such ores.

The fragmentary character of the collegiate year just closing, combined with the difficulties attending the opening of an educational institution, has prevented these researches from reaching the extent necessary to the collection of data sufficiently numerous for basing opinions respecting the full character of the ores from this region. We have, therefore, for the present restricted ourselves to the examination of some of the ores of Phelps county, and, so far as this examination has extended, the results are given below. It is to be understood that it has not been, nor is it now, our disposition to give any undue prominence to the localities furnishing the ores analyzed, by conveying the impression that they are the best known or the most extensive of the many in this region. The specimens were selected with a view simply of attaining a knowledge of the chemical features of what might be regarded as the several most characteristic and abundant varieties of ores found within the limits of Phelps county, and it is regretted that the limited time that could be taken from instructional duties did not admit of additions to the number analyzed.

To be in consonance with the intent of the act above alluded to, this paper should be popular in its character. Such it has been our effort to make it, though the use of technical terms and descriptions was unavoidable. However, the magnificent proportions attained by the iron business of the country at large, its intimate relations with progress and culture, and the host of dependents upon its various branches and departments, have served to remove many of these technicalities from the laboratory or workshop, and to bring them into current and wide circulation in general language, where they now convey ideas fully as distinct as did their former popular paraphrases.

To the detailed results of the analyses have been appended some remarks on the general characteristics of the ores, and on the influence of their more important constituents upon the quality of the iron. In the portion relating to mineralogical composition of the ores, and in that respecting the relations of the different constituents to each other in the blast furnace, there is necessarily much that is theoretical. But the conclusions offered are, it is believed, legitimately drawn from the analyses, or are those most current among iron experts. The consideration of the modes of occurrence of these ores must be reserved till time permits of the collection of further and more complete data.

Acknowledgment should be made of the very faithful and valuable assistance rendered in the investigations by Mr. William Cooch, assistant in the Laboratory of the School of Mines. Without his earnest co-operation, the results would not have been so numerous. Analyses of specimens Nos. 6, 7, 12, 13, 14, 18 and 19 were made by him under our direction.

SEC. 1, T. 35, R. 9 (No. 5*).

Finely granular; blue specular ore, with patches infilmed with limonite; powder slightly magnetic, specific gravity at 15° C, 4.7620. One cubic foot weighs 296.77 lbs. The ore, dried at 102° C, gives the following:

Ferric oxide	96.743	per cent.
(yielding metallic iron. 67.720).		
Ferrous oxide	0.801	“
(yielding metallic iron, 0.617).		
Alumina	0.249	“
Manganous oxide	0.074	“
Lime	0.417	“
Magnesia	0.097	“
Silicic Acid	0.823	“
Phosphoric acid	0.046	“
(containing phosphorus, 0.02008).		
Sulphur	0.318	“
Carbonic acid	none.	
Combined water	0.342	“
Titanic acid	a trace.	
	99,910	

Total per centage metallic iron..................68.337.

SEC. 33, T. 38, R. 8 (No. 7).

Blue specular ore, coarsely granular; occasional small cavities filled with limonite; particles attracted by the magnet. The dried sample contains:

Ferric oxide	93.690	per cent.
(yielding metallic iron, 65.583).		
Ferrous oxide	1.667	“
(yielding metallic iron, 1.296).		
Manganous oxide	0.857	“
Phosphoric acid	0.472	“
(containing phosphorus, 0.206).		
Sulphur	none.	
Alumina, lime, silicic acid and combined water	not estimated.	

Total per centage metallic iron..................66.879.

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* The numbers annexed to the analyses simply refer to the record books.

SEC. 21. T. 37, R. 8 (No. 6).

Ferric oxide	77.905	per cent.
(yielding metallic iron, 54.533).		
Ferrous oxide	2.251	“
(yielding metallic iron, 1.750).		
Manganous oxide	none.	
Sulphur	0.094	“
Phosphoric acid	0.033	“
(containing phosphorus, 0.014).		
Silicic acid, lime, alumina, magnesia, carbonic acid and combined water	not estimated.	
Total per centage metallic iron		56.283.

SEC. 20, T. 38, R. 8 (No. 8).

Brownish-black hematite, with small amounts spathic iron and limonite; particles attracted by the magnet. The ore, freed from its hygroscopic water, yields:

Ferric oxide	90.468	per cent.
(yielding metallic iron, 63.328).		
Ferrous oxide	1.109	“
(yielding metallic iron, 0.862).		
Alumina	4.045	“
Manganous oxide	0.017	“
Lime	0.642	“
Magnesia	trace.	
Silicic acid	2.631	“
Phosphoric acid	1.137	“
(containing phosphorus, 0.496).		
Sulphur	0.058	“
Carbonic acid	0.289	“
Combined water	0.027	“
	100.423	
Total per centage metallic iron		64.190

Sec. 33, T. 37, R. 8 (No. 9).

Blue specular ore, finely granular and compact; powder gives particles attracted by the magnet. The sample dried at 102° C. yields, on analysis, as follows:

Ferric oxide	97.572	per cent.
(yielding metallic iron, 68.300).		
Ferrous oxide	0.400	"
(yielding metallic iron, 0.311).		
Alumina	0.802	"
Manganous oxide	0.285	"
Lime	0.568	"
Magnesia	0.166	"
Silicic acid	1.144	"
Phosphoric acid	0.035	"
(containing phosphorus, 0.015).		
Sulphur	0.009	"
Carbonic acid	trace.	
Combined water	trace.	
	100.981	
Total per cent metallic iron		68.611

Sec. 29, T. 36, R. 7.

Compact and close grained blue, specular ore showing, in large masses, occasional small cavities or vugs with slight amounts of limonite; powder, red color, with a violet tinge; shows particles attracted by the magnet. Analysis of the ore (No. 10) freed from its hygroscopic water (dried at 102° C.):

Ferric oxide	96.217	per cent.
(yielding metallic iron, 67.353).		
Ferrous oxide	0.425	"
(yielding metallic iron, 0.330).		
Alumina	1.030	"
Manganous oxide	0.294	"
Lime	0.501	"
Magnesia	traces.	
Silicic acid	1.609	"
Phosphoric acid	0.409	"
(containing phosphorus, 0.178).		
Sulphur	0.022	"
Carbonic acid	0.061	"
Combined water	trace.	
	100.568	
Total per centage of metallic iron		67.683

Sec. 20, T. 37, R. 7.

Brownish-red ore, with coating of hydrated ore, and intermixed with small amount of spathic iron. Specific gravity 3.1219; one cubic foot therefore weighs 194.56 pounds. Analysis of the sample (No. 11) dried at 102° C.:

Ferric oxide	82.929	per cent.
(containing metallic iron, 58.050).		
Ferrous oxide	1.108	"
(containing metallic iron, 0.861).		
Alumina	0.315	"
Manganous oxide	0.454	"
Lime	3.980	"
Magnesia	0.020	"
Silicic acid	6.823	"
Sulphur	0.071	"
Phosphoric acid	2.317	"
(containing phosphorus, 1.011).		
Carbonic acid	1.378	"
Combined water	0.077	"
	99.472	
Total per centage metallic iron		58.911

Sec. 15, T. 37, R. 8 (No. 12).

Brownish-red hematite, somewhat cellular, slightly magnetic. Sample dried at 102° C. yields:

Ferric oxide	83.275	per cent.
(yielding metallic iron, 56.292).		
Ferrous oxide	1.206	"
(yielding metallic iron, 0.928).		
Alumina	traces.	
Lime	"	
Magnesia	"	
Manganous oxide	0.715	"
Silicic acid	3.099	"
Phosphoric acid	0.315	"
(yielding phosphorus, 0.137).		
Sulphur	none.	
Carbonic acid and combined water	not estimated.	
Total per centage metallic iron		57.220

Sec. 20, T. 37, R. 8 (No. 13).

Mixed spathic iron and limonite with some blue specular ore; powder slightly magnetic, but less so than any of the previous specimens. Sample dried at 102° C. yields:

Ferric oxide	45.968	per cent.
(yielding metallic iron, 32.177).		
Ferrous oxide	18.988	"
(yielding metallic iron, 14.767).		
Phosphoric acid	0.281	"
containing phosphorus, 0.122).		
Lime	0.289	"
Magnesia	trace.	
Silicic acid	1.159	"
Sulphur	trace.	
Carbonic acid and combined water	not estimated.	
Total per centage metallic iron		46.944

Sec. 30, T. 37, R. 7.

Brownish-red ore, mixed with the blue specular, and containing brown hematite with some little spathic iron. Analysis of the dry ore (No. 14):

Ferric oxide	76.521	per cent.
(containing metallic iron, 53.564).		
Ferrous oxide	0.880	"
(containing metallic iron, 0.684).		
Alumina	0.857	"
Manganous oxide	0.569	"
Lime	1.659	"
Magnesia	0.183	"
Silicic acid	13.771	"
Phosphoric acid	0.121	"
(containing phosphorus, 0.052).		
Sulphur	0.004	"
Carbonic acid	trace.	
Combined water	5.348	"
	99.913	
Total per centage of metallic iron		54.248

SEC. 15, T. 37, R. 8 (No. 15).

Mixed blue specular, spathic iron and limonite; magnetic particles. Specific gravity, 4.164. Result of dried sample:

Ferric oxide	82.272	per cent.
(yielding metallic iron, 57.590).		
Ferrous oxide	5.985	"
(yielding metallic iron, 4.608).		
Alumina	0.148	"
Manganous oxide	0.276	"
Lime	1.782	"
Magnesia	none.	
Silicic acid*	6.316	"
Carbonic acid	4.356	"
Sulphur	0.020	"
Phosphoric acid	0.327	"
(containing phosphorus, 0.142).		
Combined water	0.881	"
	102.363	
Total per centage metallic iron		62.198

SEC. 1, T. 35, R. 9 (No. 16).

Brownish-red, soft ore, showing pyrolusite. Analysis of ore dried at 102° C.:

Ferric oxide	91.705	per cent.
(yielding metallic iron, 64.194).		
Ferrous oxide	0.492	"
(yielding metallic iron, 0.383).		
Alumina	trace.	
Lime	0.881	"
Magnesia	none.	
Manganous oxide	0.927	"
Silicic acid	6.494	"
Carbonic acid	none.	
Sulphur	0.061	"
Phosphoric acid	0.376	"
(yielding phosphorus, 0.177).		
Combined water	trace.	
	100.936	
Total per centage metallic iron		64.577

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*The silicic acid in this analysis is excessive, from the fact that the alkaline carbonates used in the fusion contained a small amount of silica.

Sec. 26, T. 36, R. 7 (No. 17).

Blue specular mixed with brownish-red hematite, and containing some limonite and spathic iron :

Ferric oxide	89.684	per cent.
(containing metallic iron, 62.779).		
Ferrous oxide	0.684	"
(containing metallic iron, 0.527).		
Manganous oxide	0.252	"
Alumina	0.199	"
Lime	2.097	"
Magnesia	trace.	
Silicic acid	2.951	"
Phosphoric acid	0.249	"
(containing phosphorus, 0.109).		
Sulphur	trace.	
Carbonic acid	not estimated.	
Combined water	" "	
Total per centage metallic iron		63.306

Sec. 33, T. 38, R. 6.

Mamillary and concretionary, with concentric layers, the central one being the blue specular variety, the second of the brownish-red hematite, and the outer one a thin coating of brown hematite, probably limonite. Analysis of the ore (No. 18) dried at 102° C. :

Ferric oxide	84.463	per cent.
(yielding metallic iron, 59.124).		
Ferrous oxide	0.783	"
(yielding metallic iron, 0.609).		
Alumina	7.278	"
Manganous oxide	0.360	"
Lime	trace.	
Magnesia	0.114	"
Silicic acid	6.686	"
Phosphoric acid	0.153	"
(containing phosphorus, 0.066).		
Sulphur	0.050	"
Carbonic acid	trace.	
Combined water	trace.	
	99.887	
Total per centage of metallic iron		59.733

Sec. 29, T. 38, R. 6 (No. 19).

Finely granular, compact, brownish-red ore. Dried at 102° C., the ore yields:

Ferric oxide	49.245	per cent.
(containing metallic iron, 34.471).		
Ferrous oxide	1.203	"
(containing metallic iron, 0.926).		
Alumina	none.	
Manganous oxide	0.213	"
Magnesia	none.	
Phosphoric acid	0.109	"
(yielding phosphorus, 0.047).		
Sulphur	0.022	"
Carbonic acid	0.530	"
Combined water	0.087	"
Silicic acid	46.330	"
Lime	0.374	"
	98.113	
Total per centage metallic iron		35.397

RELATION AND INFLUENCE OF THE CONSTITUENTS.

PER-CENTAGE OF METALLIC IRON.

In the present undeveloped condition of most of the beds furnishing the specimens which have been analyzed, no samples could be obtained that might be relied upon as representing an average of their respective deposits. Necessarily, therefore, the results cannot be taken as absolutely safe guides to the formation of an opinion on the matter of the furnace or assay yield of the ores from the different beds. But it should be stated, that the specimens were casual ones—taken irrespective of the apparent richness or poorness in iron; so that, bearing this in mind, the analyses may be of some value as indices to the availability of the deposits as sources of ores either for local use or for transportation.

CONDITION OF OXIDATION, ETC.

All the ores analyzed are essentially ferric oxide, containing, when pure, seventy per cent. of metallic iron. The variations below this are to be ascribed to the admixture or combination of the other constituents named. However, most of the specimens contained a small amount of ferrous oxide (protoxide, containing, when pure, 77.77 per cent. metallic iron), which has the effect of proportionally increasing the yield. This protoxide exists either in combination with the ferric oxide—forming a small and variable amount of magnetic oxide—or it is combined with carbonic acid as a carbonate. As will be seen by the special descriptions, all the specimens gave, when in a state of fine powder, particles attracted by the magnet. As it is generally admitted that the minutest trace of protoxide in specular ore renders that ore magnetic,* we must regard some at least of the protoxide as so combined in these samples; nevertheless, in some of the specimens—particularly in the instance of Nos. 13 and 15—ferrous carbonate could be distinguished by the unaided eye, forming small specks or patches of a pale yellow color, which, on separation, gave the reaction of carbonic acid, lime and iron, so that a portion of the protoxide may be taken as existing as a carbonate or siderite.

Several of the beds of this vicinity contain no inconsiderable amount of this compound, which has locally been regarded in a rather unfavorable light, being considered as quartz, and described under the objectionable and damaging name of "flint." How such a total misapprehension of the nature of this really valuable and desirable constituent originated is difficult to imagine, unless, indeed, the local name is a corruption of one of the German names for ferrous carbonate—Flintz—and with the change in name has come a worse change in the views respecting its composition and value.

Silica does, however, exist in all the ores, but, except in the case of "No. 19," probably not altogether in a free state, but combined with alumina, lime, magnesia (and possibly with ferric or ferrous oxide), as silicates, none of which are decomposable by acids with the separation of gelatinous silica. In the exceptional case (No. 19), mechanical intermixture of white quartz was noticeable. At some of the localities given, fine crystals of both the pure white and the amethystine quartz are procurable. It must be remembered, however, that much of the yellowish mineral noticeable in the ores of the district under consideration is not quartz or "flint," but is in reality spathic iron or siderite.

The ores analyzed are, then, varieties of the red hematite species, with varying amounts of spathic iron or carbonate, and with slight traces of magnetic oxide, intermixed with quartz and silicates. In the silicates lime and alumina are the chief bases, though the last of these is very small in amount in all the ores. Part of the lime is, in some of the samples analyzed, combined with some of the carbonic acid as a carbonate of lime, but as this compound is isomorphous with ferrous carbonate, it may be regarded as part of the siderite or spathic iron. In Nos. 13, 15 and 17, carbonate of lime, as calcite, is readily distinguished in lumps of the specimens.

The magnesia is in all cases small in amount, but what is present may be looked upon as existing probably as a carbonate, as a constituent of spathic iron or the calcite. Some of it may be a component of the intermixed silicate or silicates. Except in the instance of the ore numbered sixteen, in which pyrolusite (binoxide of manganese) could be distinguished in the specimens analyzed, it is probable that the manganese exists as a carbonate, as a constituent of the spathic iron.

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*Bischoff, Chem. Geology, Vol. II, page 499 (Cavendish Edition).

Sample No. 15 perhaps best illustrates these views. A rational statement of the result of its analysis would give the following mineralogical composition to the ore:

Siderite		10.973 per cent.
containing Ferrous carbonate,	7.345.	
" Calcic "	3.182.	
" Manganous "	0.446.	
Magnetite		4.588 "
containing Ferrous oxide	1.424.	
" Ferric "	3.164.	
Limonite		6.101 "
containing Ferric oxide	5.220.	
" Water	0.881.	
Blue specular ore		73.888 "
Gangue		6.464 "
containing Silicic acid	6.316.	
" Alumina	0.148.	

independently of the small amount of sulphur existing as pyrites, and the phosphoric acid possibly existing as dufrenite or as kakoxine.

These theoretical considerations are introduced with the belief that they may be found of value, as throwing some light on the matter of the paragenesis of the minerals of the iron ore beds of southern Missouri.

Ferrous carbonate is very prone to change by the loss of carbonic acid and the absorption of oxygen and water, being converted into a hydrated ferric oxide, commonly known as "brown hematite." The soft ochreous appearance of most of the ores from this neighborhood, is due to a superficial coating of these hydrated ferric oxides, probably resulting from the alteration of the ferrous carbonate as stated. These coatings are however but superficial, a fresh fracture revealing the still hard and compact specular ores, so-called, frequently with their greater or less admixture of unchanged ferrous carbonate. The analytical evidence supports this view.*

MANGANESE.

None of the specimens analyzed are notably manganiferous, the amount of oxide of manganese ranging between none (in No. 6) and 0.927 per cent. (in No. 16), with 0.353 per cent. for an average.

This constituent is usually regarded as exerting a marked influence on the quality of the iron. Its tendency, in the blast furnace, is towards the production of a "white" cast iron, the most characteristic and best known variety of which is "spiegel eisen." As this variety contains most, if not all, its carbon in a condition of chemical combination, and very little, if any, of it as graphite, the influence of manganese would seem to be in the direction of inducing a high state of carburation in the resulting iron. Its advantageous effect in separating sulphur, and perhaps phosphorus, is also contended for, so that the benefits of its presence in ores are probably more in this direction than in that of the production of tough or hard alloys with the iron. Such in connection with its action on silicon certainly appears to be the chief benefit its presence confers in the manufacture of malleable iron or semi-steel, whether from pig irons or from the ores direct.

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*In this connection it may not be amiss to state that the protoxide in these ores was determined by means of a standard solution of chameleon mineral, after having decomposed the ores by means of oil of vitriol in an atmosphere of carbonic acid.

SULPHUR.

When it is considered that even though sulphur be absent from an ore or be present only in minute quantity, it still may be introduced into an iron or be increased in amount therein by the fuel, it will be understood why cast iron is never free from this element. Good varieties of pig metal, however, never contain more than one-half per cent. of sulphur, and all other circumstances being equal, the product of charcoal-smelting will be less sulphuretted than one when coke or raw mineral fuel has been employed. In the blast furnace, its action would appear to be in influencing the amount of carburation of the iron, tending to the production of a white pig metal, which, while it is more fusible than a slightly sulphuretted iron, is still more disposed to solidify on slight reductions of temperature below its melting point. It causes loss of iron in the puddling process of converting pig metal into malleable iron, and when present in the refined product, in amount as great as 0.05 per cent., renders the wrought iron liable to crack on the edges in forging, or in other words "red-short." Karsten contends that 0.01 per cent. sulphur is the highest amount compatible with the usefulness of the iron.

PHOSPHORUS.

In amount of five-tenths per cent. and upwards, phosphorus renders cast iron brittle. Such phosphoretted metal is, however, exceedingly well adapted for purposes of casting, since it is very fusible, and, when melted, very liquid, retaining its fluidity for a comparatively long time after reduction of temperature.

These properties give a sharpness of outline to the castings made with this variety of pig iron, which makes it somewhat desirable in the manufacture of stoves and of hollow-ware castings.

For purposes of conversion into malleable iron, or semi-steel, phosphorus-bearing pig metal is seriously objectionable, giving rise to wrought-irons which are very brittle, even at ordinary temperatures. According to Karsten and others, the usefulness of the iron is not impaired so long as the amount of phosphorus does not exceed 0.5 per cent., but Eggrtz and others contend that, even with from 0.25 to 0.30 per cent., the iron is notably "cold short" (as this brittleness at ordinary temperatures is commonly termed), though still adapted for some special uses.

By a proper proportioning and admixture of cold and red-short irons, it is believed that the injurious effects of both phosphorus and sulphur may be measurably counter-balanced with the production of a "neutral iron." Various views are entertained respecting this action. According to some writers, when a cold-short is mixed with a red-short iron, a portion of the sulphur in the latter is really driven off in the form of sulphide of carbon—through the agency of the phosphorous in the furnace. Nevertheless, such "neutral irons" are never so strong as those with the minimum amounts of sulphur and phosphorus, so that, as is advanced by Caron, when a cold-short and a red-short iron are mixed, the lessening of the peculiar properties of each by the distribution of the sulphur and phosphorus, though a larger mass of metal, is probably the result, instead of a true neutralization.

At best, the reactions of sulphur, phosphorus and manganese among themselves in the blast or puddling furnaces, and their consequent influences upon the qualities of the cast and wrought iron, are very imperfectly understood.

The ores under consideration would seem to be rather cold-short than red-short in their tendencies, the average yield of phosphorus being 0.186 per cent., while that of sulphur is 0.048 per cent. Most of the ores would, however, produce a very nearly neutral iron if smelted with charcoal fuel. We have, as yet, had no opportunity of chemically investigating the character of the pig metal produced at the only furnace in the county—the Meramec Iron Works—though we are credibly informed that it bears a high reputation as a neutral iron. This is confirmatory of the position taken, that the amounts of sulphur, phosphorus and manganese (?) are generally such as would work to produce a pig iron of desirable quality. Exceptional instances are furnished by Nos. 8 and 11, which, with 1.137 and 2.317 per cent. respectively of phosphoric acid, are decidely cold-short ores.*

COPPER.

In a number, if not all, of the beds which have as yet been opened or explored in the neighborhood, there are found small veins or pockets of chalcolite (copper pyrites). In the superficial portions of the beds, when the ores have been measurably hydrated—as before described—the chalcolite has also been superficially changed, and is found coated with azurite and malachite (blue and green basic carbonates of copper).

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*In all the analyses cited, the phosphoric acid was separated by means of ammonium molybdate with the proper precaution, converted into ammonia—magnesic phosphate—and weighed as pyrophosphate magnesia.

In one or two instances these cupriferous occurrences are of sufficient extent to promise a yield of copper great enough to constitute an incidental product of some considerable commercial value, though in no one case yet known are the deposits of sufficient extent, or so promising in continuity as to warrant special mining operations thereon.

Fortunately for the reputation of the ores from the district, the segregation of the copper into distinct veins or masses seems to have been most complete. In but one instance did the ores whose characters we have examined yield even a trace of copper, though operating in each case (specifically for copper) with amounts of 20 grammes and upwards. If this fact holds good throughout, hand-sorting, somewhat carefully conducted, will be either a provision against the influence of copper in the iron produced from these ores, or will reduce the active effects of this foreign matter to a scarcely note-worthy degree. It must, however, be borne in mind that copper to the amount of 0.2 per cent. is generally regarded as being not injurious to cast iron; while a limited quantity, even greater than that, is said to render the iron stronger and tougher. Puddling does not remove it, but even in malleable iron, as is contended by some, its injurious effects are over-rated.*

ARSENIC.

The limited amount of time allowed for these investigations, and its fragmentary character, prevented any extended investigation into the presence or absence of arsenic in the ores analyzed. Thus far only two samples have been satisfactorily and carefully examined qualitatively, and no arsenic was detected. Pyrites, from a segregation in the deposit from which samples Nos. 8 and 13 were taken, showed arsenic in small amounts, and would warrant the expectation of finding at least traces of this metal in some of the ores.

Laboratory, School of Mines, Rolla, Mo., May 27, 1872.

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*Consult on this matter Kerl's "Handbuch der Hullenkunde," Vol. 3, pages 53 and 54 (2nd edition).

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